

DVP-NS930V

RMT-D147P/D147E

SERVICE MANUAL



AEP Model
Russian Model
UK Model
Hong Kong Model

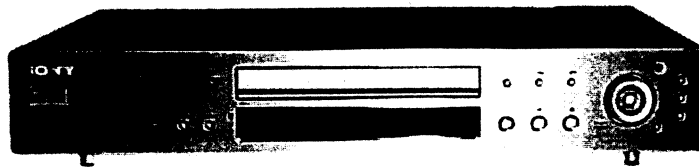


Photo: DVP-NS930V

SPECIFICATIONS

System

Laser: Semiconductor laser

Signal format system:

NTSC/PAL

Audio characteristics

Frequency response: DVD VIDEO

(PCM 96 kHz): 2 Hz to 44 kHz

(44 kHz: -2 dB±1 dB)/

Super Audio CD: 2 Hz to 100 kHz

(50 kHz: -3 dB±1 dB)/

CD: 2 Hz to 20 kHz (±0.5 dB)

Signal-to-noise ratio (S/N ratio): 115 dB

(LINE OUT L/R (AUDIO))

(AEP, RUS, UK)*

(LINE OUT L/R (AUDIO)

1/2 Jacks only) (HK)*

Phono Jack/2 Vrms/10 kilohms

Harmonic distortion: 0.003%

Dynamic range: DVD VIDEO/

Super Audio CD: 103 dB/CD: 99 dB

Wow and flutter: Less than detected

value (±0.001% W PEAK)

Output

(Jack name: Jack type/Output level/
Load impedance)

LINE OUT (AUDIO) (AEP, RUS, UK)*/

LINE OUT (AUDIO) 1/2 (HK)*

Phono jack/2 Vrms/10 kilohms

DIGITAL OUT (OPTICAL):

Optical output jack/-18 dBm

(wave length: 660 nm)

DIGITAL OUT (COAXIAL):

Phono jack/0.5 Vp-p/75 ohms

5.1CH OUTPUT:

Phono jack/2 Vrms/10 kilohms

LINE OUT (VIDEO) (AEP, RUS, UK)*/

LINE OUT (VIDEO) 1/2 (HK)*

Phono jack/1.0 Vp-p (NTSC)/75 ohms

S VIDEO OUT: 4-pin mini DIN/Y:

1.0 Vp-p, C: 0.3 Vp-p (PAL),

0.286 Vp-p (NTSC)/75 ohms

COMPONENT VIDEO OUT

(Y, Pb/Cb, Pr/Cr): Phono jack/

Y: 1.0 Vp-p, Pb/Cb, Pr/Cr:

0.7 Vp-p/75 ohms

General

Power requirements:

220 to 240 V AC, 50/60 Hz

Power consumption:

18 W (AEP, RUS, UK)*

17 W (HK)*

Dimensions (approx.):

430 × 77 × 257 mm

(17 × 3 1/8 × 10 1/8 in.)

(width/height/depth)

incl. projecting parts

Mass (approx.):

2.8 kg (6 3/16 lb)

Operating temperature: 5°C to 35°C

(41°F to 95°F)

Operating humidity: 25% to 80%

Supplied accessories

Check that you have the following items:

- Audio/video cord
(pinplug × 3 ↔ pinplug × 3) (1)
- Remote commander (remote) (1)
- Size AA (R6) batteries (2)

Specifications and design are subject to
change without notice.

*Please refer abbreviation at page 8-4.



CD/DVD PLAYER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

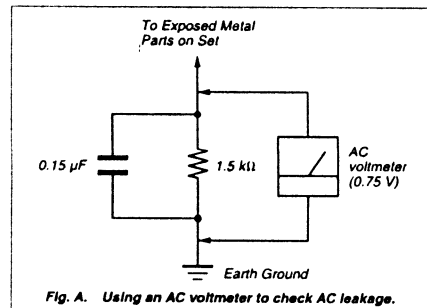


Fig. A. Using an AC voltmeter to check AC leakage.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead. (Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)



LEAD FREE MARK

Unleaded solder has the following characteristics.

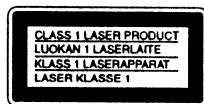
- Unleaded solder melts at a temperature about 40°C higher than ordinary solder. Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time. Soldering irons using a temperature regulator should be set to about 350°C. Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity. Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder. It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.



ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE Δ SUR LES DIAGRAMMES SCHEMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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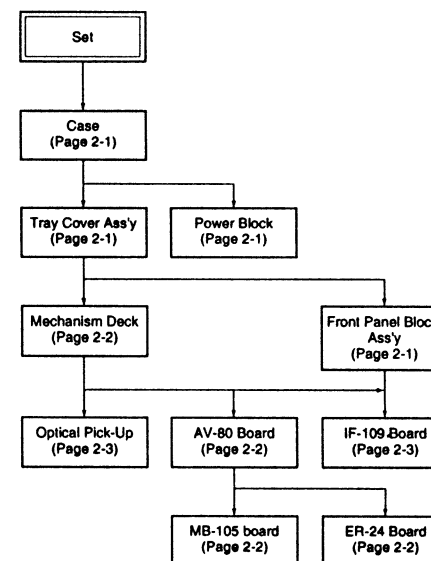
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SERVICE NOTE

1. DISASSEMBLY

- This set can be disassembled in the order shown below.



2. DISC REMOVAL PROCEDURE (at POWER OFF)

- 1) Insert a tapering driver into the aperture of the unit bottom, and move the lever of chuck cam in the direction of the arrow ④. (See Fig. 1)
- 2) Draw out the tray in the direction of the arrow ⑤, and remove a disc. (See Fig. 1)

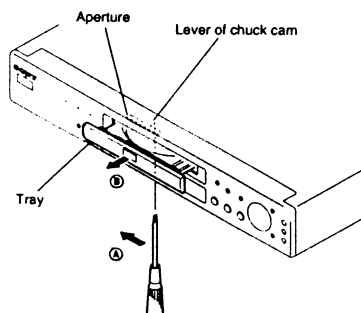
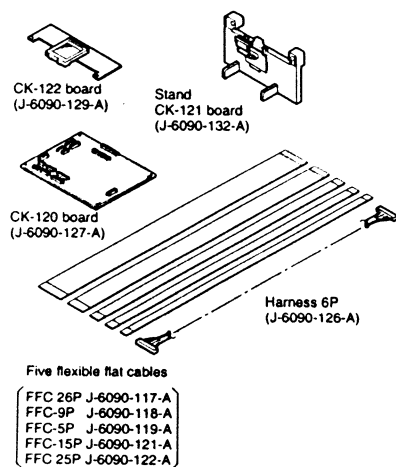


Fig. 1

3. HOW TO SERVICE MB-105 BOARD

- Use the service jig.



- 1) Remove the case from the set. (Refer to 2-1)
- 2) Remove the MB-105 board from the set. (Refer to 2-4)
- 3) Set the MB-105 board as shown in Fig. 2.

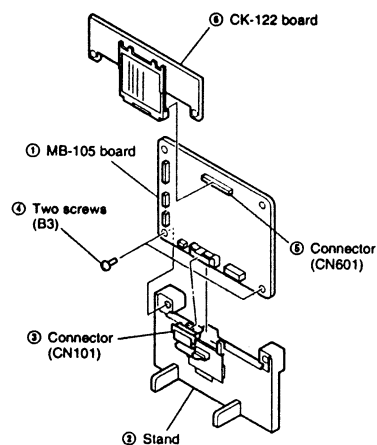


Fig. 2

- 4) Set the CK-120 board as shown in Fig. 3.

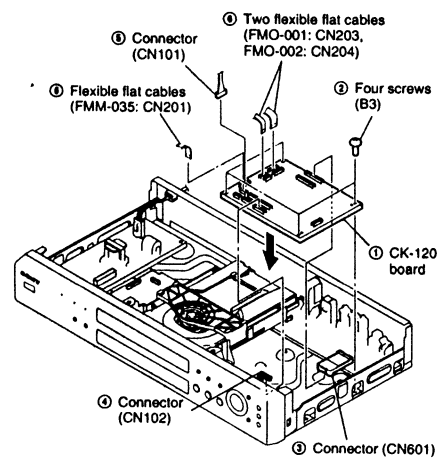


Fig. 3

- 5) Set the four flexible flat cables as shown in Fig. 4.

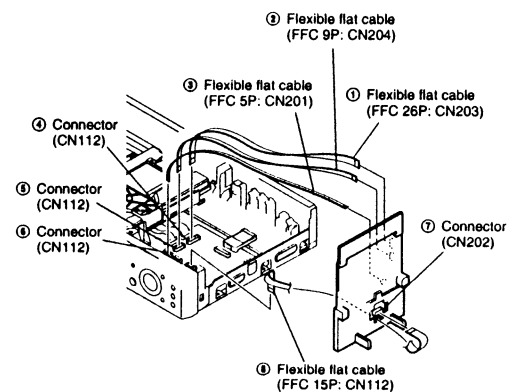


Fig. 4

- 6) Set the flexible flat cable and harness as shown in Fig. 5.

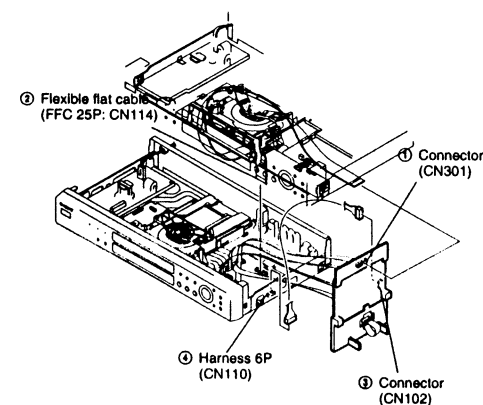


Fig. 5

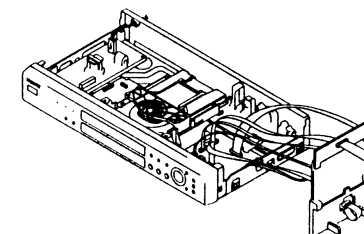


Fig. 6

SECTION 1 GENERAL

This section is extracted from instruction manual DVP-NS930V (3-083-191-12).

Precautions

On safety

- Caution – The use of optical instruments with this product will increase eye hazard.
- Should any solid object or liquid fall into the cabinet, unplug the player and have it checked by qualified personnel before operating it any further.

On power sources

- The player is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the player itself has been turned off.
- If you are not going to use the player for a long time, be sure to disconnect the player from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.

On placement

- Place the player in a location with adequate ventilation to prevent heat build-up in the player.
- Do not place the player on a soft surface such as a rug that might block the ventilation holes.
- Do not place the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.

On operation

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the player. Should this occur, the player may not operate properly. In this case, remove the disc and leave the player turned on for about half an hour until the moisture evaporates.
- When you move the player, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

IMPORTANT NOTICE

Caution: This player is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma Display Panel televisions and projection televisions are susceptible to this.

If you have any questions or problems concerning your player, please consult your nearest Sony dealer.

About This Manual

- Instructions in this manual describe the controls on the remote. You can also use the controls on the player if they have the same or similar names as those on the remote.
- "DVD" may be used as a general term for DVD VIDEOs, DVD-RWs/DVD-Rs, and DVD+RWs/DVD+Rs.
- Displays on the screen are slightly different depending upon where the model is sold.
- The meanings of the icons used in this manual are described below:

Icon	Meaning
	Functions available for DVD VIDEOs, and DVD-RWs/DVD-Rs in video mode or DVD+RWs/DVD+Rs
	Functions available for DVD-RWs in VR (Video Recording) mode
	Functions available for VIDEO CDs, Super VCDs, or CD-Rs/CD-RWs in video CD format or Super VCD format
	Functions available for Super Audio CDs
	Functions available for music CDs or CD-Rs/CD-RWs in music CD format
	Functions available for DATA CDs (CD-ROMs/CD-Rs/CD-RWs containing MP3* audio tracks)

* MP3 (MPEG 1 Audio Layer 3) is a standard format defined by ISO/MPEG which compresses audio data.

This Player Can Play the Following Discs

Format of discs
DVD VIDEO (page 82)
DVD-RW (page 83)
Super Audio CD (page 83)
VIDEO CD
Music CD

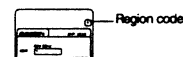
"DVD VIDEO" and "DVD-RW" are trademarks.

Region code

Your player has a region code printed on the back of the unit and only will play DVD VIDEO discs (playback only) labelled with identical region codes. This system is used to protect copyrights.

DVD VIDEOs labelled will also play on this player.

If you try to play any other DVD VIDEO, the message "Playback prohibited by area limitations." will appear on the TV screen. Depending on the DVD VIDEO, no region code indication may be labelled even though playing the DVD VIDEO is prohibited by area restrictions.



Example of discs that the player cannot play

The player cannot play the following discs:

- All CD-ROMs (including PHOTO CDs)/CD-Rs/CD-RWs other than those recorded in the following formats:
 - music CD format
 - video CD format
 - MP3 format that conforms to ISO9660* Level 1/Level 2, or its extended format, Joliet
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- A logical format of files and folders on CD-ROMs defined by ISO (International Standard Organization)

Also, the player cannot play the following discs:

- A DVD VIDEO with a different region code
- A disc that has a non-standard shape (e.g., card, heart).
- A disc with paper or stickers on it.
- A disc that has the adhesive of cellophane tape or a sticker still left on it.

Notes

- Notes about DVD-RWs/DVD-Rs, DVD+RWs/DVD+Rs or CD-Rs/CD-RWs: Some DVD-RWs/DVD-Rs, DVD+RWs/DVD+Rs, or CD-Rs/CD-RWs cannot be played on this player due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software. The disc will not play if it has not been correctly finalized. Also, images in DVD-RW discs with CPRM* protection may not be played if they contain a copy protection signal. "Copyright lock" appears on the screen. For more information, see the operating instructions for the recording device. Note that discs created in the Packet Write format cannot be played. * CPRM (Content Protection for Recordable Media) is a coding technology that protects the copyrights of images.
- Music discs encoded with copyright protection technologies: This product is designed to playback discs that conform to the Compact Disc (CD) standard. Recently, various music discs encoded with copyright protection technologies are marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

Note on playback operations of DVDs and VIDEO CDs

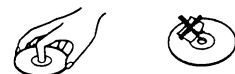
Some playback operations of DVDs and VIDEO CDs may be intentionally set by software producers. Since this player plays DVDs and VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, refer to the instructions supplied with the DVDs or VIDEO CDs.

Copyrights

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents, other intellectual property rights owned by Macrovision Corporation, and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes About the Discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface.



- Do not expose the disc to direct sunlight or heat sources, such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth.

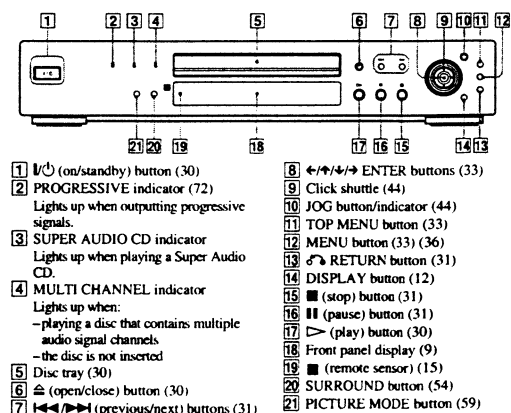


- Do not use solvents such as benzene, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.

Index to Parts and Controls

For more information, refer to the pages indicated in parentheses.

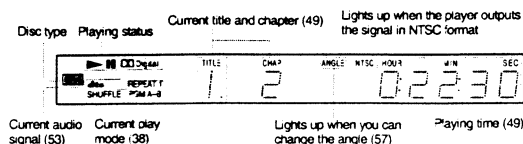
Front panel



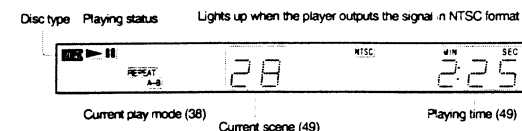
- 1 (on/standby) button (30)
- 2 PROGRESSIVE indicator (72)
- 3 SUPER AUDIO CD indicator
- 4 MULTI CHANNEL indicator
- 5 Disc tray (30)
- 6 (open/close) button (30)
- 7 (previous/next) buttons (31)
- 8 ENTER buttons (33)
- 9 Click shuttle (44)
- 10 JOG button/indicator (44)
- 11 TOP MENU button (33)
- 12 MENU button (33) (36)
- 13 RETURN button (31)
- 14 DISPLAY button (12)
- 15 (stop) button (31)
- 16 (pause) button (31)
- 17 (play) button (30)
- 18 Front panel display (9)
- 19 (remote sensor) (15)
- 20 SURROUND button (54)
- 21 PICTURE MODE button (59)

Front panel display

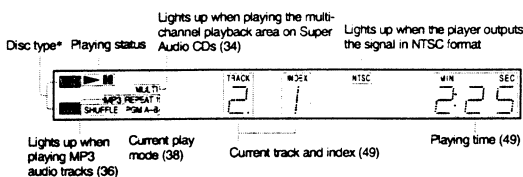
When playing back a DVD VIDEO/DVD-RW



When playing back a VIDEO CD with Playback Control (PBC) (35)

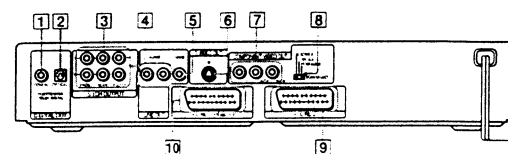


When playing back a Super Audio CD, CD, DATA CD (MP3 audio), or VIDEO CD (without PBC)



* When playing the HD layer of Super Audio CD discs, the disc type is not displayed.

Rear panel

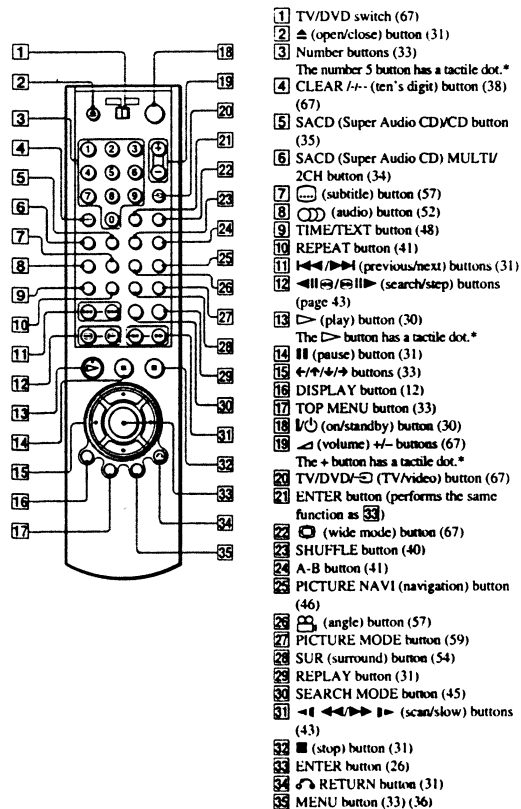


- 1 DIGITAL OUT (COAXIAL) jack (22) (23) (24)
- 2 DIGITAL OUT (OPTICAL) jack (22) (23) (24)
- 3 5.1 CH OUTPUT jacks (24)
- 4 LINE OUT L/R (AUDIO) jacks (21) (22) (23)
- 5 LINE OUT (VIDEO) jack (16)
- 6 S VIDEO OUT jack (16)
- 7 COMPONENT VIDEO OUT (16)
- 8 SCAN SELECT (16)
- 9 LINE 2 jack (16)
- 10 LINE 1 (RGB)-TV jack (16)

→ continued 9

10

Remote

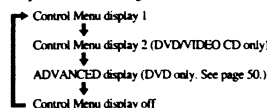


* Use the tactile dot as a reference when operating the player.

→ continued 11

Guide to the Control Menu Display (Magic Pad)

Use the Control Menu to select a function and to view related information. Press DISPLAY repeatedly to turn on or change the Control Menu display as follows:



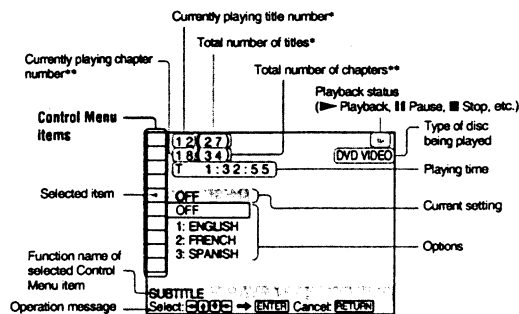
Hint

You can skip the ADVANCED display by setting "OFF" under "ADVANCED" in the Control Menu (page 50).

Control Menu Display

The Control Menu display 1 and 2 will show different items depending on the disc type. For details about each item, please refer to the pages in parentheses.

Example: Control Menu display 1 when playing a DVD VIDEO.



* Displays the scene number for VIDEO CDs (PBC is on), track number for VIDEO CD/Super Audio CDs/CDs, album number for DATA CDs.

** Displays the index number for VIDEO CD/Super Audio CDs/CDs, MP3 audio track number for DATA CDs.

List of Control Menu Items

Item	Item Name, Function, Relevant Disc Type
	TITLE (page 45)/SCENE (page 45)/TRACK (page 45) Selects the title, scene, or track to be played. DVD-V DVD-RW VCD
	CHAPTER (page 45)/INDEX (page 45) Selects the chapter or index to be played. DVD-V DVD-RW VCD
	ALBUM (page 36) Selects the album to be played. DATA CD
	TRACK (page 45) Selects the track to be played. SR-CD CD DATA CD
	INDEX (page 45) Selects the index to be played. SR-CD CD
	ORIGINAL/PLAY LIST (page 33) Selects the type of titles (DVD-RW) to be played, the ORIGINAL one, or an edited PLAY LIST. DVD-RW
	TIME/TEXT (page 45) Checks the elapsed time and the remaining playback time. Input the time code for picture and music searching. Displays the DVD/Super Audio CD/CD text or the DATA CD's track name. DVD-V DVD-RW VCD SR-CD CD DATA CD
	MULTI2CH (page 34) Selects the playback area on Super Audio CDs when available. SR-CD
	AUDIO (page 52) Changes the audio setting. DVD-V DVD-RW VCD CD DATA CD
	SUBTITLE (page 57) Displays the subtitles. Changes the subtitle language. DVD-V DVD-RW
	ANGLE (page 57) Changes the angle. DVD-V
	SURROUND (page 54) Selects the surround functions. DVD-V DVD-RW VCD CD DATA CD
	ADVANCED (page 50) Displays the information (bit rate or layer) of the disc currently playing. DVD-V DVD-RW
	PARENTAL CONTROL (page 62) Set to prohibit playback on this player. DVD-V VCD SR-CD CD

→ continued 13

	SETUP (page 69) QUICK Setup (page 26) Use Quick Setup to choose the desired language of the on-screen display, the aspect ratio of the TV, the audio output signal, and the size of the speakers you are connecting. CUSTOM Setup In addition to the Quick Setup setting, you can adjust various other settings. RESET Returns the settings in "SETUP" to the default setting. DVD-V DVD-RW VCD SR-CD CD DATA CD
	PROGRAM (page 38) Selects the title, chapter, or track to play in the order you want. DVD-V VCD SR-CD CD
	SHUFFLE (page 40) Plays the title, chapter, or track in random order. DVD-V VCD SR-CD CD
	REPEAT (page 41) Plays the entire disc (all titles/all tracks/all albums) repeatedly or one title chapter/track/album repeatedly. DVD-V DVD-RW VCD SR-CD CD DATA CD
	A-B REPEAT (page 41) Specifies the parts you want to play repeatedly. DVD-V DVD-RW VCD SR-CD CD
	BNR (page 58) Adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen. DVD-V DVD-RW VCD
	CUSTOM PICTURE MODE (page 59) Adjusts the video signal from the player. You can select the picture quality that best suits the programme you are watching. DVD-V DVD-RW VCD
	DIGITAL VIDEO ENHANCER (page 61) Exaggerates the outline of the image to produce a sharper picture. DVD-V DVD-RW VCD
	PICTURE NAVIGATION (page 46) Divides the screen into 9 sub-screens to help you find the scene you want quickly. DVD-V VCD

Hint
The Control Menu icon indicator lights up in green → when you select any item except "OFF," "SURROUND," "PROGRAM," "SHUFFLE," "REPEAT," "A-B REPEAT," "BNR," "DIGITAL VIDEO ENHANCER" only). The "ANGLE" indicator lights up in green only when the angles can be changed. The "CUSTOM PICTURE MODE" indicator lights up in green when any setting other than "STANDARD" is selected.

14

Hookups

Hooking Up the Player

Follow Steps 1 to 6 to hook up and adjust the settings of the player.

Notes

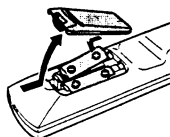
- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this player to a TV that does not have a video input jack.
- Be sure to disconnect the power cord (mains lead) of each component before connecting.

Step 1: Unpacking

- Check that you have the following items:
- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
 - Remote commander (remote) (1)
 - R6 (size AA) batteries (2)

Step 2: Inserting Batteries Into the Remote

You can control the player using the supplied remote. Insert two R6 (size AA) batteries by matching the and ends on the batteries to the markings inside the compartment. When using the remote, point it at the remote sensor on the player.



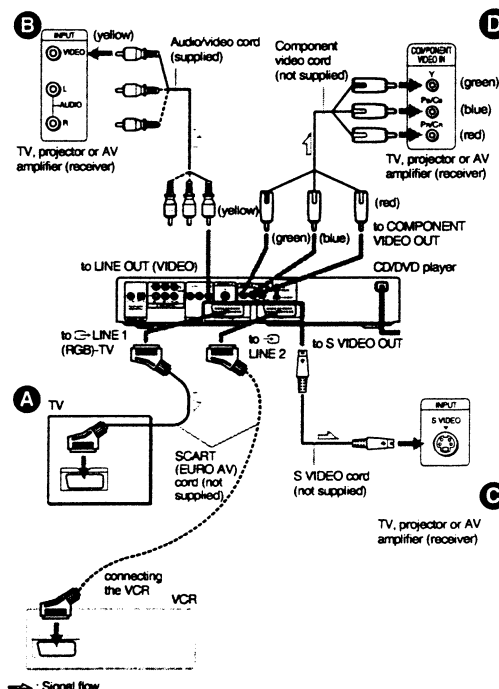
Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not drop any foreign object into the remote casing, particularly when replacing the batteries.
- Do not expose the remote sensor to direct light from the sun or a lighting apparatus. Doing so may cause a malfunction.
- If you do not use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.

15

Step 3: Connecting the Video Cords

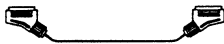
Connect this player to your TV monitor, projector, or AV amplifier (receiver) using a video cord. Select one of the patterns through , according to the input jack on your TV monitor, projector, or AV amplifier (receiver). In order to view progressive signal (525p or 625p) pictures with a compatible TV, projector, or monitor, you must use connection .



16

④ If you are connecting to a SCART (EURO AV) input jack

Connect the SCART (EURO AV) cord (not supplied). Be sure to make the connections firmly to avoid hum and noise. When you connect using the SCART (EURO AV) cord, check that the TV conforms to S VIDEO or RGB signals. Refer to the operating instructions supplied with the TV to be connected. Also, when you set "LINE" to "S VIDEO" or "RGB" under "SCREEN SETUP" in the Setup Display (page 72), use a SCART (EURO AV) cord that conforms to each signal.

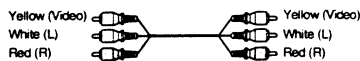


If you are connecting to a VCR

Connect your VCR to the LINE 2 jack on the player. The VCR can record the signal only from your TV.

⑤ If you are connecting to a video input jack

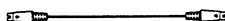
Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jacks. You will enjoy standard quality images.



Use the red and white plugs to connect to the audio input jacks (page 21). (Do this if you are connecting to a TV only.)

⑥ If you are connecting to an S VIDEO input jack

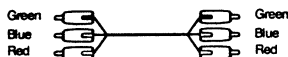
Connect an S VIDEO cord (not supplied). You will enjoy high quality images.



⑦ If you are connecting to a monitor, projector, or AV amplifier (receiver) having component video input jacks (Y, Pb/Cb, Pr/Cr)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate colour reproduction and high quality images.

If your TV accepts progressive 525p/625p format signals, you must use this connection and set "COMPONENT OUT" to "PROGRESSIVE" in "SCREEN SETUP" (page 71). The PROGRESSIVE indicator lights up when the player outputs progressive signals.

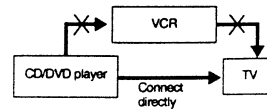


When connecting to a wide screen TV

Depending on the disc, the image may not fit your TV screen. If you want to change the aspect ratio, please refer to page 71.

Notes

- Do not connect a VCR, etc. between your TV and the player. If you pass the player signals via the VCR, you may not receive a clear image on the TV screen. If your TV has only one audio/video input jack, connect the player to this jack.



- When you connect the player to your TV via the SCART (EURO AV) jacks, the TV's input source is set to the player automatically when you start playback. In this case, press TV/DVD on the remote to return the input to the TV.
- If you set "LINE" to "RGB" in SCREEN SETUP (page 27, 73), the player outputs no component video signals.
- Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In the case of progressive scan picture problems, it is recommended that you switch the connection to the standard definition output. If there are questions regarding your Sony TV set's compatibility with this DVD player, please contact our customer service centre.
- If you cannot view the pictures from a VCR through this player which is connected to a TV with RGB component jacks, set — 1 to — 2 (Audio/Video) on your TV. When you select — 2 (RGB), the TV cannot receive the signal from the VCR.
- If you want to use your VCR's SmartLink function, connect the VCR to your TV's SCART (EURO AV) jack and connect the player to the TV with another jack.
- The SmartLink function may not work properly if your VCR is connected to your TV via the SCART (EURO AV) jacks on the player.

→ continued 17

18

Step 4: Connecting the Audio Cords

Refer to the chart below to select the connection that best suits your system. Be sure to also read the instructions for the components you wish to connect.

Select a connection

Select one of the following connections, A through D.

Components to be connected	Connection	How to connect
TV • Surround effects: TVS DYNAMIC (page 54), TVS WIDE (page 54)	A (page 21)	
Stereo amplifier (receiver) and two speakers • Surround effects: TVS STANDARD (page 55) or MD deck/DAT deck • Surround effects: TVS STANDARD (page 55)	B (page 22)	
AV amplifier (receiver) having a Dolby® Surround (Pro Logic) decoder and 3 to 6 speakers • Surround effects: Dolby Surround (Pro Logic) (page 82)	C (page 23)	
AV amplifier (receiver) with 5.1 ch input jacks and 4 to 6 speakers • Surround effects: – Dolby Digital (5.1 ch) (page 82) – DTS (5.1 ch) (page 82) – Super Audio CD Multi channel (page 83) – MPEG audio (5.1 ch) (page 83) or AV amplifier (receiver) with digital input jacks having a Dolby Digital, DTS®, or MPEG audio decoder and 6 speakers • Surround effects: – Dolby Digital (5.1 ch) (page 82) – DTS (5.1 ch) (page 82) – MPEG audio (5.1 ch) (page 83)	D (page 24)	

Hint

If you connect an AV amplifier (receiver) that conforms to the 96 kHz sampling frequency, use connection D.

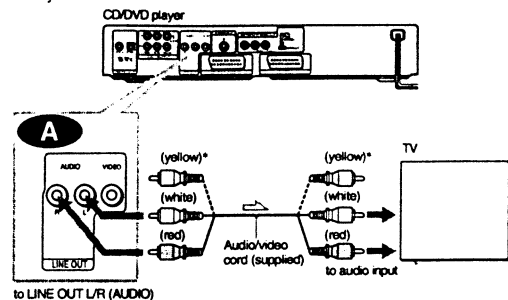
- Manufactured under license from Dolby Laboratories.
"Dolby", "Pro Logic", and the double-D symbol are trademarks of Dolby Laboratories.
- Manufactured under license from Digital Theater Systems, Inc. US Pat. No. 5,451,942, 5,956,674, 5,974,380, 5,978,762 and other world-wide patents issued and pending. "DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc. Copyright 1996, 2000 Digital Theater Systems, Inc. All rights reserved.

→ continued 19

20

A Connecting to your TV

This connection will use your TV speakers for sound. If you use the SCART (EURO AV) cord in **A** of "Step 3: Connecting the Video Cords" (page 16), you do not have to connect audio cords to your TV.



→: Signal flow

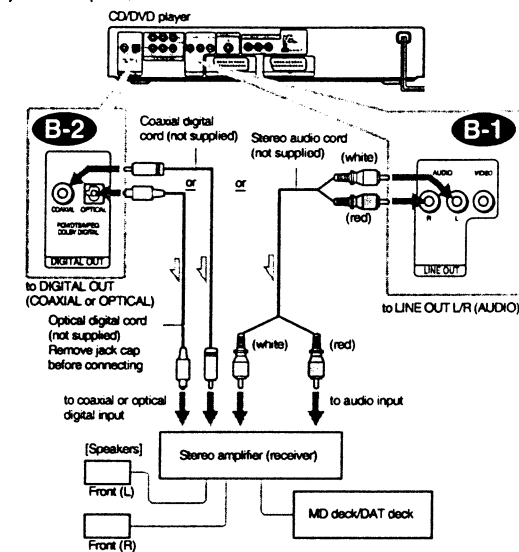
* The yellow plug is used for video signals (page 16).

Hint

When connecting to a monaural TV, use a stereo-to-monaural conversion cord (not supplied). Connect the LINE OUT L/R (AUDIO) jacks to the TV's audio input jack.

B Connecting to a stereo amplifier (receiver) and 2 speakers/Connecting to an MD deck or DAT deck

If the stereo amplifier (receiver) has audio input jacks L and R only, use **B-1**. If the amplifier (receiver) has a digital input jack, or when connecting to an MD deck or DAT deck, use **B-2**. In this case, you can also connect the player directly to the MD deck or DAT deck without using your stereo amplifier (receiver).



→: Signal flow

Hints

- In connection **B-2**, you can use the supplied audio/video cord instead of using a separate stereo audio cord.
- To realize better surround sound effects, make sure that your listening position is in between your speakers.

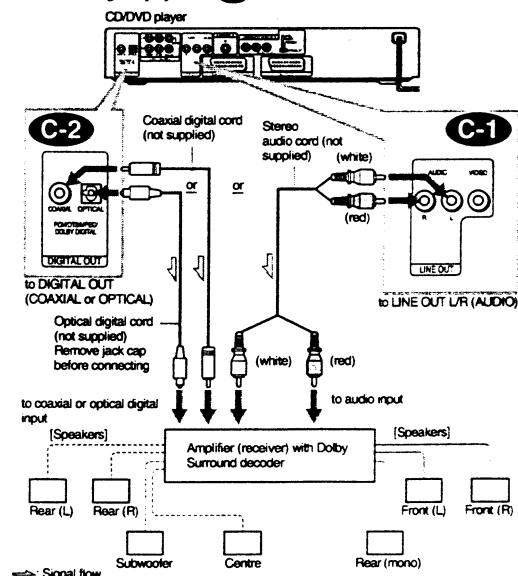
Note

Super Audio CD audio signals are not output from the digital jack.

C Connecting to an AV amplifier (receiver) having a Dolby Surround (Pro Logic) decoder and 3 to 6 speakers

You can enjoy the Dolby Surround effects only when playing Dolby Surround audio or multi-channel audio (Dolby Digital) discs.

If your amplifier (receiver) has L and R audio input jacks only, use **C-1**. If your amplifier (receiver) has a digital input jack, use **C-2**.



Hint

For correct speaker location, refer to the operating instructions of the amplifier (receiver).

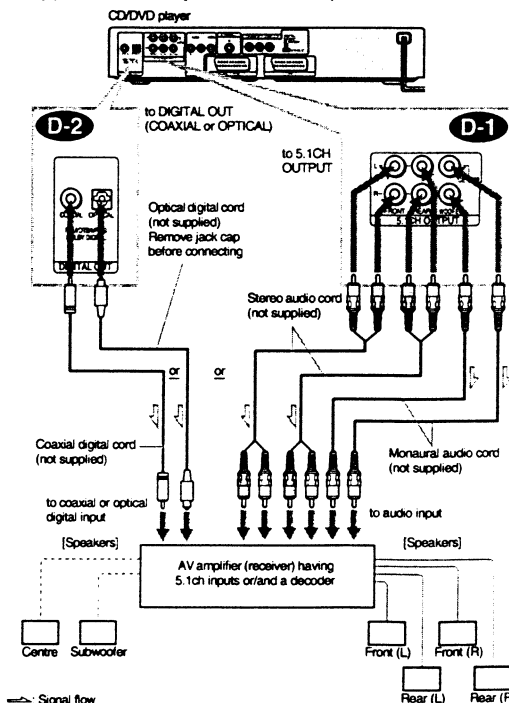
Notes

- When connecting 6 speakers, replace the monaural rear speaker with a centre speaker, 2 rear speakers and a subwoofer.
- Super Audio CD audio signals are not output from the digital jack.

D Connecting to an AV amplifier (receiver) with 5.1 ch input jacks and/or a digital input jack and 4 to 6 speakers

If your AV amplifier (receiver) has 5.1 channel inputs, use **D-1**.

If you want to use the Dolby Digital, MPEG audio, or DTS decoder function on your AV amplifier (receiver), connect to its digital input using **D-2**. With the following connections, you can enjoy a more realistic audio presence in the comfort of your own home.



→: Signal flow

→ continued 21

22

→ continued 23

24

0-1: Connecting to the 5.1ch input jacks
You can enjoy 5.1ch surround sound using the internal Dolby Digital, MPEG audio, DTS or Super Audio CD Multi decoder of this player. (When 6 speakers are connected, set "SURROUND" to "OFF.")
You can also enjoy Dolby Surround (Pro Logic) sounds, or surround sounds using various "SURROUND" modes (page 54).

0-2: Connecting to a digital jack
This connection will allow you to use the Dolby Digital, MPEG audio, or DTS decoder function of your AV amplifier (receiver). You are not able to enjoy the surround sound effects of this player.

Hints

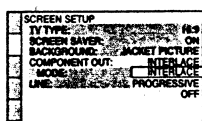
- For connection 0-2
- For correct speaker location, refer to the operating instructions of the connected components.
- To enhance the sound performance:
 - Use high-performance speakers.
 - Use front, rear, and centre speakers of the same size and performance.
 - Place the subwoofer between the left and right front speakers.

Notes

- For connection 0-2
- After you have completed the connection, be sure to set "DOLBY DIGITAL" to "DOLBY DIGITAL" and "DTS" to "DTS" in Quick Setup (page 26). If your AV amplifier (receiver) has an MPEG audio decoder function, set "MPEG" in "AUDIO SETUP" to "MPEG" (page 76).
 - When you connect an amplifier (receiver) that conforms to the 96 kHz sampling frequency, set "48kHz/96kHz PCM" in "AUDIO SETUP" to "96kHz/24bit" (page 76).
 - Super Audio CD audio signals are not output from the digital jack.

8 Press ENTER.

The Setup Display for selecting the type of video signal output from the COMPONENT VIDEO OUT jacks appears.



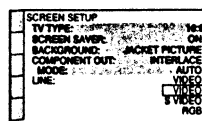
9 Press +/- to select the type of signal you wish to output to your TV.

Select "PROGRESSIVE" only if you have made video connection 0-1 and wish to view progressive video signals.

- If you have an interface format TV (standard TV)
 - INTERLACE (page 71)
- If you have a progressive format TV
 - PROGRESSIVE (page 71)
- If you intend to set "LINE" to "RGB" in step 11
 - OFF (page 71)

10 Press ENTER.

The Setup Display for selecting the type of video signal output from the LINE 1 (RGB)-TV jack appears.



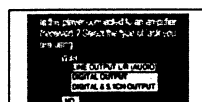
11 Press +/- to select the type of signal you want to output from the LINE 1 (RGB)-TV jack.

If you select "INTERLACE" or "PROGRESSIVE" in step 9, you cannot select "RGB".

- Video signals
 - VIDEO (page 72)
- S video signals
 - S VIDEO (page 72)
- RGB signals
 - RGB (page 72)

12 Press ENTER.

The Setup Display for selecting the type of jack used to connect your amplifier (receiver) appears.



13 Press +/- to select the type of jack (if any) you are using to connect to an amplifier (receiver), then press ENTER.

Choose the item that matches the audio connection you selected on pages 21 to 24 (A through D).

- If you connect just a TV and nothing else, select "NO." Quick Setup is finished and connections are complete.
- Select "LINE OUTPUT L/R (AUDIO)." Quick Setup is finished and connections are complete.
- Select "DIGITAL OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.
- Select "DIGITAL & 5.1CH OUTPUT." The Setup Display for "DOLBY DIGITAL" appears.

14 Press +/- to select the type of Dolby Digital signal you wish to send to your amplifier (receiver).

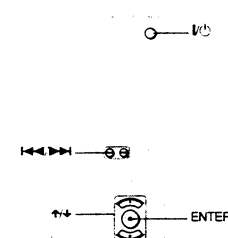
Choose the signal that matches the audio connection you selected on pages 22 to 24 (E through H).

Step 5: Connecting the Mains Lead

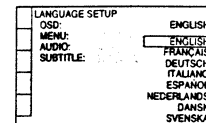
Plug the player and TV mains lead (power cord) into a mains.

Step 6: Quick Setup

Follow the steps below to make the minimum number of basic adjustments for using the player. To skip an adjustment, press >>>. To return to the previous adjustment, press <<<.



- Turn on the TV.
- Press <<<.
- Switch the input selector on your TV so that the signal from the player appears on the TV screen. "Press [ENTER] to run QUICK SETUP" appears at the bottom of the screen. If this message does not appear, select "QUICK" under "SETUP" in the Control Menu to run Quick Setup (page 70).
- Press ENTER without inserting a disc. The Setup Display for selecting the language used in the on-screen display appears. The available languages differ depending upon the player model.

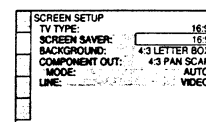


5 Press +/- to select a language.

The player uses the language selected here to display the menu and subtitles as well.

6 Press ENTER.

The Setup Display for selecting the aspect ratio of the TV to be connected appears.



7 Press +/- to select the setting that matches your TV type.

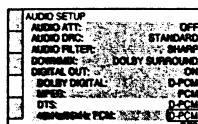
- If you have a wide-screen TV or a 4:3 standard TV with a wide-screen mode
 - 16:9 (page 71)
- If you have a 4:3 standard TV
 - 4:3 LETTER BOX or 4:3 PAN SCAN (page 71)



- D-PCM (page 76)
- DOLBY DIGITAL (only if the amplifier (receiver) has a Dolby Digital decoder) (page 76)

15 Press ENTER.

"DTS" is selected.



16 Press +/- to select the type of DTS signal sent to your amplifier (receiver).

Choose the item that matches the audio connection you selected on pages 22 to 24 (E through H).

- D-PCM (page 76)
- DTS (page 76) (only if the amplifier (receiver) has a DTS decoder)

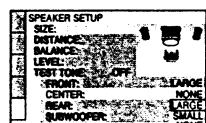
17 Press ENTER.

- When "DIGITAL OUTPUT" is selected in step 11
 - Quick Setup is finished and connections are complete.
 - If your AV amplifier (receiver) has an MPEG audio decoder, set "MPEG" to "MPEG" (page 76).

- When "DIGITAL & 5.1CH OUTPUT" is selected in step 11
 - The Setup Display for "SPEAKER SETUP" appears.

18 Press +/- to select the size of the centre speaker.

If no centre speaker is connected, select "NONE" (page 77).



19 Press ENTER.

"REAR" is selected.

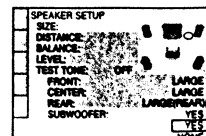


20 Press +/- to select the size of the rear speakers.

If no rear speaker is connected, select "NONE." "SIDE" and "REAR" refer to the speaker position relative to your listening position (page 77).

21 Press ENTER.

"SUBWOOFER" is selected.



22 Press \uparrow/\downarrow to select whether or not you have connected a subwoofer.

23 Press ENTER.

Quick Setup is finished. All connections and setup operations are complete.

Enjoying the surround sound effects

To enjoy the surround sound effects of this player or your amplifier (receiver), set the following items as described below for the audio connection you selected on pages 22 to 24 (A through D). Each of these is the default setting and does not need to be adjusted when you first connect the player. Refer to page 69 for using the Setup Display.

Audio Connection (pages 21 to 24)

- A**
 - No additional settings are needed.
- B1 C1**
 - Set "DOWNMIX" to "DOLBY SURROUND" (page 75).
 - If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 75).
- B2 C2 D2**
 - Set "DOWNMIX" to "DOLBY SURROUND" (page 75).
 - Set "DIGITAL OUT" to "ON" (page 75).
 - Set "48kHz/96kHz PCM" to "96kHz/24bit," only if you connect an amplifier (receiver) that conforms to the 96 kHz sampling frequency (page 76).
- D1**
 - Set "DISTANCE," "BALANCE," and "LEVEL" according to the connected speakers (page 77).
 - If the sound distorts even when the volume is turned down, set "AUDIO ATT" to "ON" (page 75).

Headups

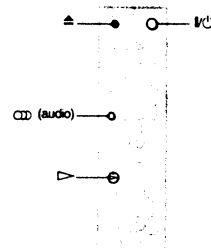
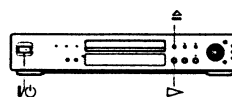
Playing Discs

Playing Discs DVD-V

DVD-RW VCD SA-CD CD

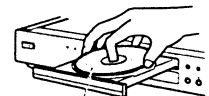
DATA CD

Depending on the DVD or VIDEO CD, some operations may be different or restricted. Refer to the operating instructions supplied with your disc.



◆ When using an amplifier (receiver)
Turn on the amplifier (receiver) and select the appropriate channel so that you can hear sound from the player.

4 Press \triangle on the player, and place a disc on the disc tray.



With the playback side facing down

5 Press \triangleright .

The disc tray closes, and the player starts playback (continuous play). Adjust the volume on the TV or the amplifier (receiver).

Depending on the disc, a menu may appear on the TV screen. For DVD VIDEOS, see page 33. For VIDEO CDs, see page 35.

To turn off the player

Press I/O . The player enters standby mode.

Hint

The player will turn off automatically whenever you leave it in stop mode for more than 30 minutes (Auto Power Off function).

Note

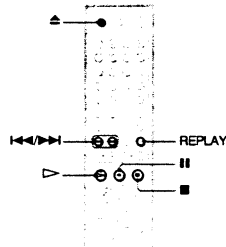
Super Audio CD audio signals are not output from the digital jack.

- 1 Turn on your TV.
- 2 Press I/O .
The player turns on.
- 3 Switch the input selector on your TV so that the signal from the player appears on the TV screen.

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Additional operations



To	Operation
Stop	Press \blacksquare
Pause	Press II
Resume play after pause	Press II or \triangleright
Go to the next chapter, track, or scene in continuous play mode	Press FWD
Go back to the previous chapter, track, or scene in continuous play mode	Press REV
Stop play and remove the disc	Press \triangle
Replay the previous scene (DVD VIDEO/DVD-RW/DVD-R only)	Press REPLAY

Hint

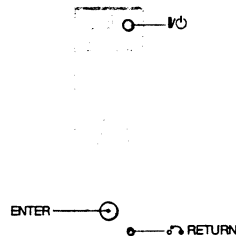
The Replay function is useful when you want to review a scene or dialog that you missed.

Note

You may not be able to use the Replay function with some scenes.

Locking the disc tray (Child Lock)

You can lock the disc tray to prevent children from opening it.



When the player is in standby mode, press FWD RETURN, ENTER, and then I/O on the remote.

The player turns on and "LOCKED" appears on the front panel display. The \triangle button on the player or the remote does not work while the Child Lock is set.

To unlock the disc tray

When the player is in standby mode, press FWD RETURN, ENTER, and then I/O again.

Note

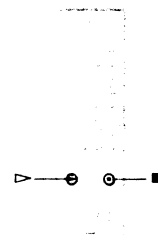
Even if you select "RESET" under "SETUP" in the Control Menu (page 70), the disc tray remains locked.

Playing Discs

Resuming Playback From the Point Where You Stopped the Disc (Multi-disc Resume)

Resume) DVD-V VCD

The player stores the point where you stopped the disc for up to 40 discs and resumes playback the next time you insert the same disc. When you store a resume playback point for the 41st disc, the resume playback point for the first disc is deleted.



1 While playing a disc, press \blacksquare to stop playback.

"RESUME" appears on the front panel display.

2 Press \triangleright .

The player starts playback from the point where you stopped the disc in step 1.

Hints

- To play from the beginning of the disc, press \blacksquare twice, then press \triangleright .
- For DVD-RWs in VR mode, CDs, Super Audio CDs, and DATA CDs, the player remembers the resume playback point for the current disc unless the disc tray is opened, the mains lead is disconnected, or only for DATA CDs, the player enters standby mode.

Notes

- "MULTI-DISC RESUME" in "CUSTOM SETUP" must be set to "ON" (default) for this function to work (page 74).
- The resume playback point for the current disc is cleared when:
 - you change the play mode.
 - you change the settings on the Setup Display.
- Resume Play does not work during Shuffle Play and Programme Play.
- This function may not work with some discs.
- If "MULTI-DISC RESUME" in "CUSTOM SETUP" is set to "ON" and you playback a recorded disc such as DVD-RW, the player may playback other recorded discs from the same resume point. To play from the beginning, press \blacksquare twice and then press \triangleright .

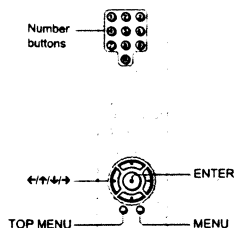
31

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Using the DVD's Menu

DVD-V

A DVD is divided into long sections of a picture or a music feature called "titles." When you play a DVD which contains several titles, you can select the title you want using the TOP MENU button. When you play DVDs that allow you to select items such as the language for the subtitles and the language for the sound, select these items using the MENU button.

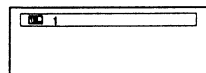


1 Press TOP MENU or MENU.

The disc's menu appears on the TV screen. The contents of the menu vary from disc to disc.

2 Press ←/→/↵ or the number buttons to select the item you want to play or change.

If you press the number buttons, the following display appears. Press the number buttons to select the item you want.

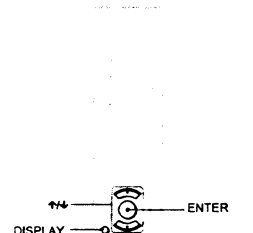


3 Press ENTER.

Hint
The disc's menu also appears when the TOP MENU or MENU button on the player is pressed.

Selecting "ORIGINAL" or "PLAY LIST" on a DVD-RW Disc DVD-RW

Some DVD-RW discs in VR (Video Recording) mode have two types of titles for playback: originally recorded titles (ORIGINAL) and titles that can be created on recordable DVD players for editing (PLAY LIST). You can select the type of titles to be played.



1 Press DISPLAY in stop mode.

The Control Menu appears.

2 Press ←/→ to select [ORIGINAL/PLAY LIST], then press ENTER.

The options for "ORIGINAL/PLAY LIST" appear.

3 Press ←/→ to select the setting.

- PLAY LIST: plays the titles created from "ORIGINAL" for editing.
- ORIGINAL: plays the titles originally recorded.

4 Press ENTER.

To turn off the Control Menu

Press DISPLAY repeatedly until the Control Menu is turned off.

Selecting a Playback Area for a Super Audio CD Disc SACD

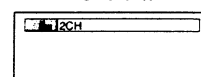
SACD
MULTI/2CH → ○ → SACD/CD

Selecting a playback area on a 2 channel + Multi-channel Super Audio CD

Some Super Audio CDs consist of a 2 channel playback area and a multi-channel playback area. You can select the playback area you want to listen to.

1 Press SACD MULTI/2CH in stop mode.

The following display appears.



2 Press SACD MULTI/2CH repeatedly to select the item.

- MULTI: plays a multi-channel playback area.
- 2CH: plays a 2 channel playback area. The "MULTI" indicator in the front panel display lights up when playing a multi-channel playback area.

Hint

You can also select "MULTI/2CH" from the Control Menu (page 12).

Selecting a playback layer when playing a hybrid Super Audio CD

Some Super Audio CDs consist of an HD layer and a CD layer. You can select the playback layer you want to listen to.

Press SACD/CD in stop mode.

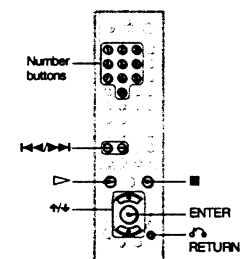
Each time you press the button, an HD layer or a CD layer is alternately selected. When playing a CD layer, the "CD" indicator in the front panel display lights up.

Notes

- For details about Super Audio CD discs, see page 83.
- Each play mode function works only within the selected layer or playback area.

Playing VIDEO CDs With PBC Functions (PBC Playback) VCD

PBC (Playback Control) allows you to play VIDEO CDs interactively by following the menu on the TV screen.



1 Start playing a VIDEO CD with PBC functions.

The menu for your selection appears.

2 Select the item number you want by pressing ←/→ or the number buttons.

3 Press ENTER.

4 Follow the instructions in the menu for interactive operations.

Refer to the instructions supplied with the disc, as the operating procedure may differ depending on the VIDEO CD.

To return to the menu
Press ⏮ RETURN.

Hint

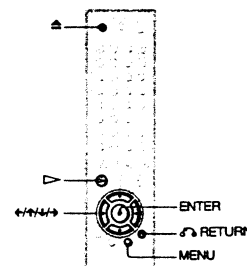
To play without using PBC, press ⏮/⏭/⏮/⏭ or the number buttons while the player is stopped to select a track, then press ⏮ or ENTER. "Play without PBC" appears on the TV screen and the player starts continuous play. You cannot play still pictures such as a menu. To return to PBC playback, press ■ twice then press ⏮.

Notes

- Depending on the VIDEO CD, "Press ENTER" in step 3 may appear as "Press SELECT" in the instructions supplied with the disc. In this case, press ⏮.
- The PBC functions of Super VCDs do not work with this player. Super VCDs are played in continuous play mode only.

Playing an MP3 Audio Track DATA CD

You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format.



1 Press ▲ and place a DATA CD on the disc tray.

2 Press ▶.

The disc tray closes, and the player starts to play the first MP3 audio track in the first album on the disc.

Notes

- The player can play MP3 audio tracks recorded in the following sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz.
- The playback order may be different from the edited order. See "The Playback order of MP3 audio tracks" on the next page for details.

Selecting an album and track

1 Press MENU.

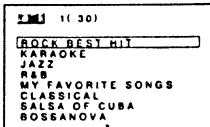
The list of MP3 albums recorded on the DATA CD appears.

→ continued 33

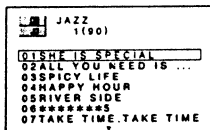
34

→ continued 35

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- 2 Select an album using \uparrow/\downarrow and press ENTER.
The list of tracks contained in the album appears.



- 3 Select a track using \uparrow/\downarrow and press ENTER.
The selected track starts playing.
When a track or album is being played, its title is shaded.

To go to the next or previous page
Press \rightarrow or \leftarrow .

To return to the previous display
Press \leftarrow RETURN.

To turn off the display
Press MENU.

Notes

- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as an "x".
- ID3 tags cannot be displayed.

About MP3 audio tracks

You can play MP3 audio tracks on CD-ROMs or CD-Rs/CD-RWs. However, the discs must be recorded according to ISO9660 level 1, level 2, or Joliet format for the player to recognize the tracks.
You can also play discs recorded in Multi Session.

See the instructions of the CD-R/CD-RW device or recording software (not supplied) for details on the recording format.

To play a Multi Session CD

This player can play Multi Session CDs when an MP3 audio track is located in the first session. Any subsequent MP3 audio tracks, recorded in the later sessions, can also be played back.
When audio tracks and images in music CD format or video CD format are recorded in the first session, only the first session will be played back.

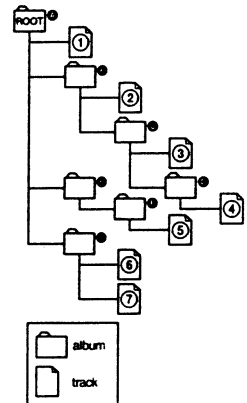
Notes

- If you put the extension ".MP3" to data not in MP3 format, the player cannot recognize the data properly and will generate a loud noise which could damage your speaker system.
- The player cannot play audio tracks in MP3PRO format.

The Playback order of MP3 audio tracks
The playback order of albums and tracks recorded on a DATA CD is as follows.

Structure of disc contents

Tree 1 Tree 2 Tree 3 Tree 4 Tree 5



Playing Discs

When you insert a DATA CD and press \triangleright , the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: ① contains ② so ② is played before ③.)

When you press MENU and the list of MP3 albums appears (page 36), the albums are arranged in the following order: ① \rightarrow ② \rightarrow ③ \rightarrow ④ \rightarrow ⑤ \rightarrow ⑥ \rightarrow ⑦. Albums that do not contain tracks (such as album ③) do not appear in the list.

Hints

- If you add numbers (01, 02, 03, etc.) to the front of the track file names, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create albums of no more than two trees.

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the illustration above.
- The playback order above may not be applicable if there are more than a total of 999 albums and tracks in the DATA CD.
- The player can recognize up to 499 albums (the player will count just albums, including albums that do not contain MP3 audio tracks). The player will not play any albums beyond the first 499 albums. Of the first 499 albums, the player will play no more than a combined total of 999 albums and tracks.

Various Play Mode Functions (Programme Play, Shuffle Play, Repeat Play, A-B Repeat Play)

You can set the following play modes:

- Programme Play (page 38)
- Shuffle Play (page 40)
- Repeat Play (page 41)
- A-B Repeat Play (page 41)

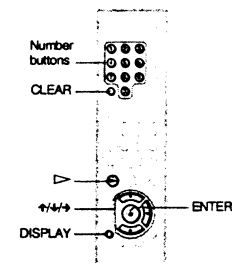
Note

The play mode is cancelled when:

- you open the disc tray.
- the player enters standby mode by pressing L .

Creating your own programme (Programme Play) DVD V VCD SA/CD CD

You can play the contents of a disc in the order you want by arranging the order of the titles, chapters, or tracks on the disc to create your own programme. You can programme up to 99 titles, chapters, and tracks.

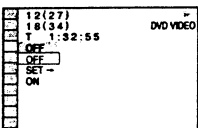


\rightarrow continued 37

38

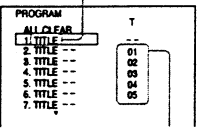
- 1 Press DISPLAY twice (when playing a Super Audio CD/CD, press once).
The Control Menu appears.

- 2 Press \uparrow/\downarrow to select "PROGRAM" (PROGRAM), then press ENTER.
The options for "PROGRAM" appear.



- 3 Press \uparrow/\downarrow to select "SET \rightarrow ," then press ENTER.

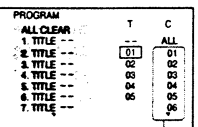
"TRACK" is displayed when you play a VIDEO CD, Super Audio CD, or CD.



Titles or tracks recorded on a disc

- 4 Press \rightarrow .

The cursor moves to the title or track row "T" (in this case, "01").



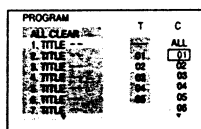
Chapters recorded on a disc

- 5 Select the title, chapter, or track you want to programme.

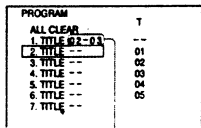
When playing a DVD VIDEO

For example, select chapter "03" of title "02."

Press \uparrow/\downarrow or the number buttons to select "02" under "T," then press ENTER.



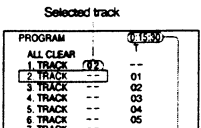
Next, press \uparrow/\downarrow or the number buttons to select "03" under "C," then press ENTER.



Selected title and chapter

When playing a VIDEO CD, Super Audio CD, or CD

For example, select track "02."
Press \uparrow/\downarrow or the number buttons to select "02" under "T," then press ENTER.
A track number may be displayed in 3 digits for a Super Audio CD.



Total time of the programmed tracks

- 6 To programme other titles, chapters, or tracks, repeat steps 4 to 5.
The programmed titles, chapters, and tracks are displayed in the selected order.

- 7 Press \triangleright to start Programme Play.

Programme Play begins.
When the programme ends, you can restart the same programme again by pressing \triangleright .

Playing Discs

To return to normal play

Press CLEAR, or select "OFF" in step 3. To play the same programme again, select "ON" in step 3 and press ENTER.

To turn off the display

Press DISPLAY repeatedly until the display is turned off.

To change or cancel a programme

- Follow steps 1 through 3 of "Creating your own programme (Programme Play)."
- Select the programme number of the title, chapter, or track you want to change or cancel using \uparrow/\downarrow or the number buttons, and press \rightarrow .
- Follow step 5 for new programming. To cancel a programme, select "-" under "T," then press ENTER.

To cancel all the titles, chapters, or tracks in the programmed order

- Follow steps 1 through 3 of "Creating your own programme (Programme Play)."
- Press \rightarrow and select "ALL CLEAR."
- Press ENTER.

Hint

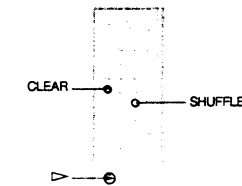
You can do Repeat Play or Shuffle Play of the programmed titles, chapters, or tracks. During Programme Play, follow the steps of "Repeat Play" (page 41) or "Shuffle Play" (page 40).

Notes

- When playing Super VCDs, the total time of the programmed tracks does not appear on the screen.
- You cannot use this function with VIDEO CDs with PBC playback.

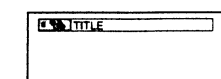
Playing in random order (Shuffle Play) DVD V VCD SA/CD CD

You can have the player "shuffle" titles, chapters, or tracks. Subsequent "shuffling" may produce a different playing order.



- 1 Press SHUFFLE during playback.

The following display appears.



- 2 Press SHUFFLE repeatedly to select the item to be shuffled.

- When playing a DVD VIDEO
 - TITLE
 - CHAPTER

- When playing a VIDEO CD, Super Audio CD, or CD
 - TRACK

- When Programme Play is activated
 - ON: shuffles titles, chapters, or tracks selected in Programme Play.

To return to normal play

Press CLEAR, or select "OFF" in step 2.

Hints

- You can set Shuffle Play while the player is stopped. After selecting the "SHUFFLE" option, press \triangleright . Shuffle Play starts.
- Up to 200 chapters in a disc can be played in random order when "CHAPTER" is selected.

\rightarrow continued 39

40

- You can also select "SHUFFLE" from the Control Menu (page 12).

Note

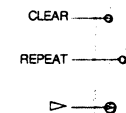
You cannot use this function with VIDEO CDs with PBC playback.

Playing repeatedly (Repeat Play)

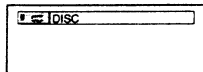
DVD-V DVD-RW VCD SR-CD CD DATA CD

You can play all of the titles or tracks on a disc or a single title, chapter, or track repeatedly.

You can use a combination of Shuffle or Programme Play modes.



- 1 Press REPEAT during playback. The following display appears.



- 2 Press REPEAT repeatedly to select the item to be repeated.

- ◆ When playing a DVD VIDEO
 - DISC: repeats all of the titles.
 - TITLE: repeats the current title on a disc.
 - CHAPTER: repeats the current chapter.
- ◆ When playing a DVD-RW
 - DISC: repeats all the titles of the selected type.
 - TITLE: repeats the current title on a disc.

- CHAPTER: repeats the current chapter.
- ◆ When playing a VIDEO CD, Super Audio CD, or CD
 - DISC: repeats all of the tracks.
 - TRACK: repeats the current track.
- ◆ When playing a DATA CD (MP3 audio)
 - DISC: repeats all of the albums.
 - ALBUM: repeats the current album.
 - TRACK: repeats the current track.
- ◆ When Programme Play or Shuffle Play is activated
 - ON: repeats Programme Play or Shuffle Play.

To return to normal play

Press CLEAR, or select "OFF" in step 2.

Hints

- You can set Repeat Play while the player is stopped. After selecting the "REPEAT" option, press > to Repeat Play starts.
- You can also select "REPEAT" from the Control Menu (page 12).

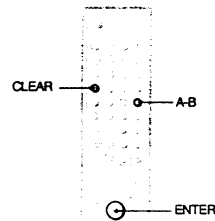
Note

You cannot use this function with VIDEO CDs with PBC playback.

Repeating a specific portion (A-B Repeat Play)

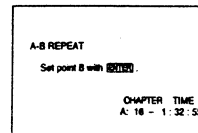
DVD-V DVD-RW VCD SR-CD CD

You can play a specific portion of a title, chapter or track repeatedly. (This function is useful when you want to memorize lyrics, etc.)



→ continued 41

- 1 During playback, when you find the starting point (point A) of the portion to be played repeatedly, press A-B. The starting point (point A) is set.



- 2 When you reach the ending point (point B), press ENTER or A-B again. The player starts repeating this specific portion.

To return to normal play

Press CLEAR.

Hint

You can select "A-B REPEAT" from the Control Menu (page 12)

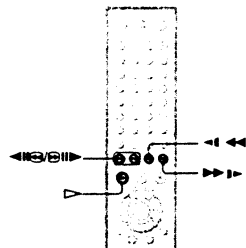
Notes

- When you set A-B Repeat Play, the settings for Shuffle Play, Repeat Play, and Programme Play are cancelled.
- A-B Repeat Play does not work for titles containing still pictures on a DVD-RW in VR mode.
- A-B Repeat Play does not work across multiple titles on a DVD-RW in VR mode.

Searching for a Scene

Searching for a Particular Point on a Disc (Search, Scan, Slow-motion Play, Freeze Frame)

You can quickly locate a particular point on a disc by monitoring the picture or playing back slowly.



Note

Depending on the DVD/VIDEO CD, you may not be able to do some of the operations described.

Locating a point quickly (Search)

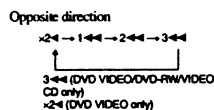
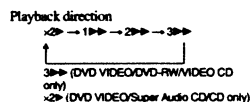
DVD-V DVD-RW VCD SR-CD CD DATA CD

During playback, press and hold down <|> to locate a point in the playback direction or press and hold down <|> to locate a point in the opposite direction. When you find the point you want, release the button to return to normal playback speed.

Locating a point quickly by playing a disc in fast forward or fast reverse (Scan)

DVD-V DVD-RW VCD SR-CD CD DATA CD

Press <|> or <|> while playing a disc. When you find the point you want, press > to return to normal speed. Each time you press <|> or <|> during scan, the playback speed changes. With each press the indication changes as shown below. Actual speeds may differ with some discs.

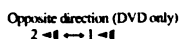
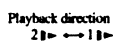


The "x2" "x3" "x4" playback speed is about twice the normal speed. The "x3" "x4" "x5" playback speed is faster than "x2" "x3" "x4" and the "x5" "x6" "x7" playback speed is faster than "x3" "x4" "x5".

Watching frame by frame (Slow-motion Play)

DVD-V DVD-RW VCD

Press <|> or <|> when the player is in pause mode. To return to the normal speed, press >. Each time you press <|> or <|> during Slow-motion play, the playback speed changes. Two speeds are available. With each press the indication changes as follows:



The "x2" "x3" "x4" playback speed is slower than "x1" "x2" "x3".

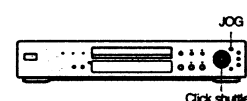
Playing one frame at a time (Freeze Frame)

DVD-V DVD-RW VCD

When the player is in the pause mode, press <|> to go to the next frame. Press <|> to go to the preceding frame (DVD only). If you hold the button down, you can view the frames in succession. To return to normal playback, press >.

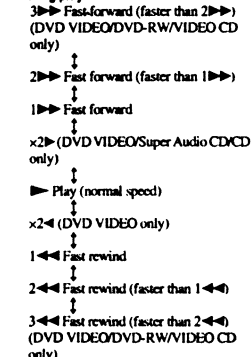
Using the click shuttle on the player (Shuttle mode)

DVD-RW VCD SR-CD CD DATA CD



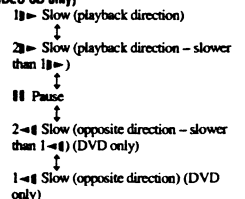
Turn the click shuttle on the player. The playback speed changes depending on the turning direction and degree of rotation shown below. Actual speeds may differ with some discs.

During playback



If you turn the click shuttle quickly, the playback speed goes to "x3" or "x4" at once.

◆ During pause mode (DVD VIDEO, DVD-RW, VIDEO CD only)



To return to normal play
Press >.

Playing a disc frame by frame using the click shuttle (Jog mode)

DVD-V DVD-RW VCD

- 1 Press JOG. The indicator lights up and the player enters pause mode.

- 2 Turn the click shuttle.

Depending on the turning speed, playback goes to frame-by-frame playback in the direction that the click shuttle is turned. Turn the click shuttle clockwise to go forward, and counterclockwise to rewind (DVD only). If you turn the click shuttle at a constant speed for a while, the playback speed goes to slow or normal.

To return to normal play
Press >.

To turn off the Jog mode
Press JOG again so that the indicator turns off.

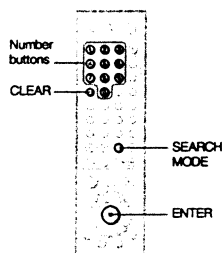
→ continued 43

44

Searching for a Title/Chapter/Track/Scene, etc. (Search mode) DVD-V

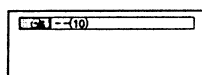
DVD-RW VCD SA-CD CD
DATA CD

You can search a DVD by title or chapter, and you can search a VIDEO CD/Super Audio CD/CD/DATA CD by track, index, or scene. As titles and tracks are assigned unique numbers on the disc, you can select the desired one by entering its number. Or, you can search for a scene using the time code.



1 Press SEARCH MODE.

The following display appears.
"– (**) " appears next to the icon (**) refers to a number).
The number in parentheses indicates the total number of titles, tracks, indexes, scenes, etc., of the disc.



2 Press SEARCH MODE repeatedly to select the search method.

- ◆ When playing a DVD VIDEO/DVD-RW
 - TITLE
 - CHAPTER
 - TIME/TEXT
 Select "TIME/TEXT" to search for a starting point by inputting the time code.
- ◆ When playing a VIDEO CD without PBC playback
 - TRACK
 - INDEX
- ◆ When playing a VIDEO CD with PBC Playback
 - SCENE
 - INDEX
- ◆ When playing a Super Audio CD/CD
 - TRACK
 - INDEX
- ◆ When playing a DATA CD (MP3 audio)
 - ALBUM
 - TRACK

3 Select the number of the title, track, scene, time code, etc. you want by pressing the number buttons to select the digit.

For example, to find the scene at 2 hours, 10 minutes, and 20 seconds after the beginning, select "TIME/TEXT" in step 2 and enter "21020."

If you make a mistake
Cancel the number by pressing CLEAR, then select another number.

4 Press ENTER.

The player starts playback from the selected number.

To turn off the display
Press SEARCH MODE repeatedly until the display is turned off.

Searching for a Scene

- When the Control Menu display is turned off, you can search for a chapter (DVD VIDEO DVD-RW) or track (CD) by pressing the number buttons and ENTER.

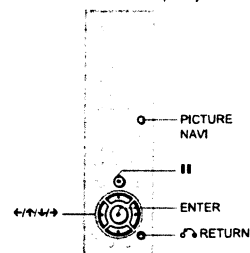
Notes

- The title, chapter, or track number displayed is the same number recorded on the disc.
- You cannot search for a scene on a DVD-RW using the time code.
- You cannot search for a still picture on a DVD-RW in VR mode.

Searching by Scene

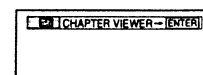
(PICTURE NAVIGATION) DVD-V VCD

You can divide the screen into 9 subscreens and find the desired scene quickly.



1 Press PICTURE NAVI during playback.

The following display appears.



2 Press PICTURE NAVI repeatedly to select the item.

- Refer to the explanations given for each item in the following sections.
- CHAPTER VIEWER (DVD VIDEO only)
- TITLE VIEWER (DVD VIDEO only)
- TRACK VIEWER (VIDEO CD only)

3 Press ENTER.

To return to normal play
Press RETURN.

Hint
You can also select "PICTURE NAVIGATION" from the Control Menu (page 12).

Notes

- The "PICTURE NAVIGATION" is not available when playing Super VCDs.
- Depending on the disc, you may not be able to select all functions.
- The sound is muted when using this function.

Scanning the chapter, title, or track (CHAPTER VIEWER, TITLE VIEWER, TRACK VIEWER)

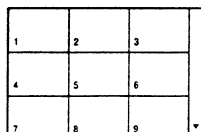
DVD-V VCD

You can divide the screen into 9 subscreens and display the first scene of chapters, titles, or tracks.

You can also play back from the selected chapter, title, or track. After performing step 3 of "Searching by Scene (PICTURE NAVIGATION)" above, select the scene using ←/→/↑/↓ and press ENTER.

Hint

If there are more than 9 chapters, titles, or tracks, ▼ is displayed at the bottom right.
To display the additional chapters, titles, or tracks, select the bottom right scene (the position 9) and press ↓. To return to the previous scene, select the top left scene (the position 1) and press ↑.

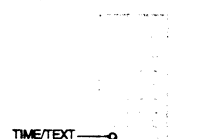


Viewing Information About the Disc

Checking the Playing Time and Remaining Time

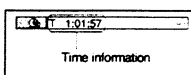
DVD-V DVD-RW VCD
SA-CD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the DVD/Super Audio CD/CD text or track name (MP3 audio) recorded on the disc.



1 Press TIME/TEXT during playback.

The following display appears.



2 Press TIME/TEXT repeatedly to change the time information.

The display and the kinds of time that you can change depend on the disc you are playing.

◆ When playing a DVD VIDEO or DVD-RW

- T : : : (hours:minutes:seconds)
Playing time of the current title
- T - : : :
Remaining time of the current title
- C : : :
Playing time of the current chapter
- C - : : :
Remaining time of the current chapter

◆ When playing a VIDEO CD (with PBC functions)

- : : : (minutes:seconds)
Playing time of the current scene

◆ When playing a VIDEO CD (without PBC functions), Super Audio CD, or CD

- T : : : (minutes:seconds)
Playing time of the current track
- T - : : :
Remaining time of the current track
- D : : :
Playing time of the current disc
- D - : : :
Remaining time of the current disc

◆ When playing a DATA CD (MP3 audio)

- : : : (minutes:seconds)
Playing time of the current track

◆ When playing a Super VCD

- T : : : (minutes:seconds)
Playing time of the current track

To check the DVD/Super Audio CD/CD text or track and album names (MP3 audio)
Press TIME/TEXT repeatedly in step 2 to display text recorded on the DVD VIDEO/Super Audio CD/CD/DATA CD.
The DVD/Super Audio CD/CD text appears only when text is recorded in the disc. You cannot change the text. If the disc does not contain text, "NO TEXT" appears.



For DATA CDs, the track and album names of the MP3 audio track appears (page 51).

→ continued 45

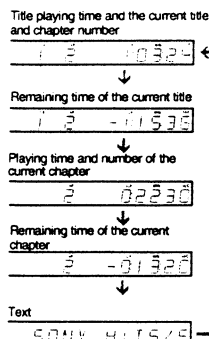
46

Searching for a Scene

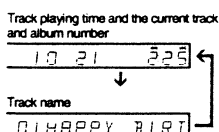
Checking the information on the front panel display

You can view the time information and text displayed on the TV screen also on the front panel display. The information on the front panel display changes as follows when you change the time information on your TV screen.

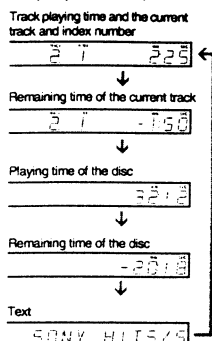
When playing a DVD VIDEO or DVD-RW



When playing a DATA CD (MP3 audio)



When playing a VIDEO CD (without PBC functions), Super Audio CD, or CD



Viewing Information About the Disc

Hints

- When playing VIDEO CDs with PBC functions, the scene number and the playing time are displayed.
- Long text that does not fit in a single line will scroll across the front panel display.
- You can also check the time information and text using the Control Menu (page 12).

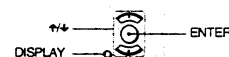
Notes

- Depending on the type of disc being played, the disc's text or track name may not be displayed.
- The player can only display the first level of the disc's text, such as the disc name or title.
- Playing time of MP3 audio tracks may not be displayed correctly.

Checking the Play Information

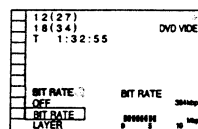
You can check information such as the bit rate or the disc layer that is being played.

TIME/TEXT



Checking the play information of a DVD (ADVANCED)

- 1 Press **DISPLAY** during playback. The Control Menu is displayed.
- 2 Press **TIME/TEXT** to select **TIME** (ADVANCED), then press **ENTER**. The options for "ADVANCED" appear.



- 3 Press **TIME/TEXT** to select items. For each item, refer to "Display of each item."
 - BIT RATE: displays the bit rate.
 - LAYER: displays the layer and the pick-up point.
- 4 Press **ENTER**.

To turn off the ADVANCED window
Select "OFF" in step 3.

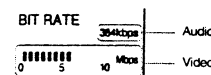
To turn off the Control Menu

Press **DISPLAY** repeatedly until the Control Menu is turned off.

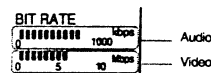
Display of each item

By pressing **DISPLAY** repeatedly, you can display either "BIT RATE" or "LAYER," whichever was selected in "ADVANCED."

◆BIT RATE



When playing MPEG audio sound tracks



Bit rate refers to the amount of video/audio data per second in a disc. While playing a disc, an approximate bit rate of the playback picture is displayed as Mbps (Mega bit per second) and the audio as kbps (kilo bit per second). The higher the bit rate, the larger the amount of data. However, this does not always mean that you can get higher quality pictures or sounds.

◆LAYER

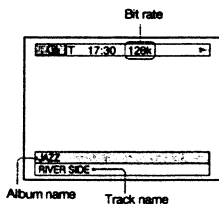
Appears when the DVD has dual layers



Indicates the approximate point where the disc is playing. If it is a dual-layer DVD, the player indicates which layer is being read ("Layer 0" or "Layer 1"). For details on the layers, see page 82 (DVD VIDEO).

Checking the play information of a DATA CD

By pressing **TIME/TEXT** while playing MP3 audio tracks on a DATA CD, you can display the audio bit rate (the amount of data per second of the current audio).



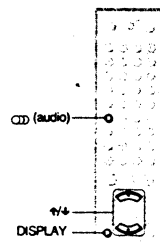
Viewing Information About the Disc

Sound Adjustments

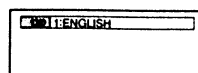
Changing the Sound

DVD-V DVD-RW VCD CD
DATA CD

When playing a DVD VIDEO recorded in multiple audio formats (PCM, Dolby Digital, MPEG audio, or DTS), you can change the audio format. If the DVD VIDEO is recorded with multilingual tracks, you can also change the language. With CDs, DATA CDs, or VIDEO CDs, you can select the sound from the right or left channel and listen to the sound of the selected channel through both the right and left speakers. For example, when playing a disc containing a song with the vocals on the right channel and the instruments on the left channel, you can hear the instruments from both speakers by selecting the left channel.



- 1 Press **AUDIO** during playback. The following display appears.



- 2 Press **AUDIO** repeatedly to select the desired audio signal.

◆ When playing a DVD VIDEO
Depending on the DVD VIDEO, the choice of language varies. When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 86 to see which language the code represents. When the same language is displayed two or more times, the DVD VIDEO is recorded in multiple audio formats.

◆ When playing a DVD-RW
The types of sound tracks recorded on a disc are displayed. The default setting is underlined.

- Example:
- 1: MAIN (main sound)
 - 1: SUB (sub sound)
 - 1: MAIN+SUB (main and sub sound)

◆ When playing a VIDEO CD, CD, or DATA CD (MP3 audio)

- The default setting is underlined.
- STEREO: The standard stereo sound
 - 1/L: The sound of the left channel (monaural)
 - 2/R: The sound of the right channel (monaural)

- ◆ When playing a Super VCD
The default setting is underlined.
- 1: STEREO: The stereo sound of the audio track 1
 - 1: 1/L: The sound of the left channel of the audio track 1 (monaural)
 - 1: 2/R: The sound of the right channel of the audio track 1 (monaural)
 - 2: STEREO: The stereo sound of the audio track 2
 - 2: 1/L: The sound of the left channel of the audio track 2 (monaural)
 - 2: 2/R: The sound of the right channel of the audio track 2 (monaural)

Hint

You can also select "AL/DIG" from the Control Menu (page 12).

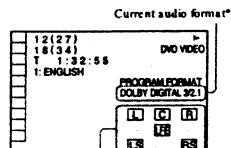
Notes

- While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1 L," or "2:2/ R."
- You cannot change the sound for Super Audio CDs.

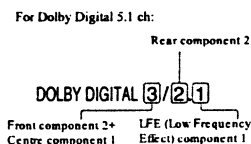
Displaying the audio information of the disc DVD

Press DISPLAY during playback to display the Control Menu. Select "AUDIO" using \uparrow \downarrow . The channels being played are displayed on the screen.

For example, in Dolby Digital format, multiple signals ranging from monaural to 5.1 channel signals can be recorded on a DVD VIDEO. Depending on the DVD VIDEO, the number of the recorded channels may differ.



*"PCM," "MPEG," "DTS," or "DOLBY DIGITAL" is displayed. In the case of "DOLBY DIGITAL," the channels in the playing track are displayed by numbers as follows:



**The letters in the programme format display indicate the following sound components:

- L: Front (left)
- R: Front (right)
- C: Centre
- LS: Rear (left)
- RS: Rear (right)
- S: Rear (monaural): The rear component of the Dolby Surround processed signal and the Dolby Digital signal
- LFE: Low Frequency Effect signal

Hint

When playing Dolby Digital or DTS sound tracks, "LFE" is enclosed in a dotted line when the LFE signal is not being output.

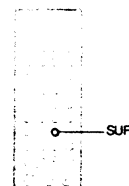
Sound Adjustments

SURROUND Mode

Settings DVD-V DVD-RW VCD

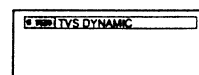
CD DATA CD

You can enjoy surround sounds while playing discs including Dolby Digital, DTS and MPEG audio DVDs, even if you have only 2 or 4 speakers. Select the surround mode that best suits your speaker setup.



1 Press SUR during playback.

The following display appears.



2 Press SUR repeatedly to select one of the surround modes.

Refer to the following explanations given for each item.

- ◆ For 2 speaker setups
 - TVS DYNAMIC
 - TVS WIDE
 - TVS NIGHT
 - TVS STANDARD
- ◆ For 4 to 6 speaker setups
 (If you select "NONE" in the setting of "REAR" in "SPEAKER SETUP" (page 76), you cannot select these modes.)
 - NORMAL SURROUND
 - ENHANCED SURROUND
 - VIRTUAL REAR SHIFT
 - VIRTUAL MULTI REAR
 - VIRTUAL MULTI DIMENSION

To cancel the setting... Select "OFF" in step 2.

For 2 speaker setups

When you connect a stereo TV or 2 front speakers, TVS (TV Virtual Surround) lets you enjoy surround sound effects by using sound imaging to create virtual rear speakers from the sound of the front speakers (L: left, R: right) without using actual rear speakers.

If the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the surround effect will be heard only when "DOLBY DIGITAL" and "DTS" are set to "D-PCM" and "MPEG" is set to "PCM" in "AUDIO SETUP" (page 75).

◆TVS DYNAMIC

Creates one set of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below.

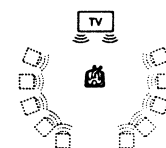
This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.



◆TVS WIDE

Creates five sets of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below.

This mode is effective when the distance between the front L and R speakers is short, such as with built-in speakers on a stereo TV.

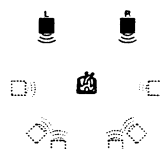


◆TVS NIGHT

Large sounds, such as explosions, are suppressed, but the quieter sounds are unaffected. This feature is useful when you want to hear the dialog and enjoy the surround sound effects of "TVS WIDE" at low volume.

◆TVS STANDARD

Creates three sets of virtual rear speakers from the sound of the actual front speakers (L, R) as shown below. This mode is effective when you use 2 separate front speakers.



- L: Front speaker (left)
- R: Front speaker (right)
- Virtual speaker

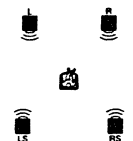
For 4 to 6 speaker setups

You can enjoy the following surround effects by using the 2 front speakers and 2 rear speakers.

Connect the player to the amplifier (receiver) with the HDMI connection (page 24). You can experience Dolby Surround (Pro Logic) sounds or Digital Cinema Sound (DCS). DCS uses sound imaging to shift the sound of the rear speakers away from the actual speaker position or create entire sets of virtual rear speakers from one set of actual rear speakers. "VIRTUAL REAR SHIFT," "VIRTUAL MULTI REAR," and "VIRTUAL MULTI DIMENSION" make use of this technology.

◆NORMAL SURROUND

Software with 2 channel audio signals is decoded with the Dolby Surround (Pro Logic) decoder to create surround effects. The rear speakers will emit identical monaural sounds. If you are using a centre speaker, the appropriate sounds for the centre speaker will be delivered.

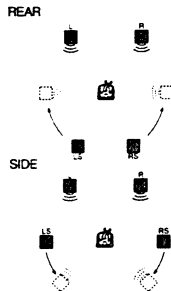


◆ENHANCED SURROUND

Provides a greater sense of presence from a Dolby Surround (Pro Logic) source with a monaural rear channel signal. Produces a stereo like effect in the rear channels.

◆VIRTUAL REAR SHIFT

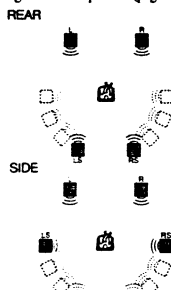
Shifts the sound of the rear speakers away from the actual speaker position. The shift position differs according to "REAR" or "SIDE" setting of the rear speakers (page 76).



Sound Adjustments

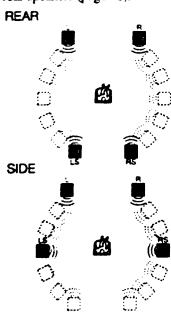
◆VIRTUAL MULTI REAR

Creates an array of virtual rear speakers from a single set of actual rear speakers. The position of the virtual rear speakers differs according to "REAR" or "SIDE" setting of the rear speakers (page 76).



◆VIRTUAL MULTI DIMENSION

Creates an array of virtual rear speaker positions higher than the listener from a single set of actual rear speakers. This mode creates five sets of virtual speakers surrounding the listener at approximately a 30° angle of elevation. The effect differs according to "REAR" or "SIDE" setting of the rear speakers (page 76).



- L: Front speaker (left)
- R: Front speaker (right)
- LS: Rear speaker (left)
- RS: Rear speaker (right)
- Virtual speaker

Hints

- You can select "SURROUND" by pressing the SURROUND button on the player.
- You can also select "SURROUND" from the Control Menu (page 12).

Notes

- To enjoy the multichannel audio through the 5.1CH OUTPUT jacks, correctly set each speaker position and distance (page 76).
- When the playing signal does not contain a signal for the rear speakers, it may be difficult to hear the sound effects.
- When you select one of the TVS modes, the player does not output the sound of centre speaker.
- When you select one of the surround modes, turn off the surround setting of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- "TVS NIGHT" only works with Dolby Digital discs. However, not all discs will respond to the "TVS NIGHT" function in the same way.
- If you use the DIGITAL OUT (OPTICAL or COAXIAL) jack and set "DOLBY DIGITAL" to "DOLBY DIGITAL," "DTS" to "DTS," and "MPEG" to "MPEG" in "AUDIO SETUP," sound will come from your speakers but it will not have the SURROUND effect.
- If the player is set up to output the signal from the DIGITAL OUT (OPTICAL or COAXIAL) jack, the TVS effect will not be heard when you play a CD.

Enjoying Movies

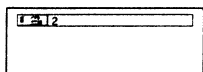
Changing the Angles

DVD-V

If various angles (multi-angles) for a scene are recorded on the DVD VIDEO, "ANGLE" appears in the front panel display. This means that you can change the viewing angle.

- 1 Press (angle) during playback.

The number of the angle appears on the display.



- 2 Press (angle) repeatedly to select the angle number.

The scene changes to the selected angle.

Hint
You can also select "ANGLE" from the Control Menu (page 12).

Note

Depending on the DVD VIDEO, you may not be able to change the angles even if multi-angles are recorded on the DVD VIDEO.

Displaying the Subtitles

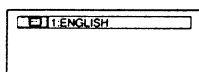
DVD-V DVD-RW

If subtitles are recorded on the discs, you can change the subtitles or turn them on and off whenever you want while playing a DVD.

(subtitle)

- 1 Press (subtitle) during playback.

The following display appears.



- 2 Press (subtitle) repeatedly to select the setting.

When playing a DVD VIDEO

Select the language.
Depending on the DVD VIDEO, the choice of language varies.
When 4 digits are displayed, they indicate a language code. Refer to "Language Code List" on page 86 to see which language the code represents.

When playing a DVD-RW

Select "ON."

To turn off the subtitles
Select "OFF" in step 2.

Hint
You can also select "SUBTITLE" from the Control Menu (page 12).

Enjoying Movies

→ continued 57

Note

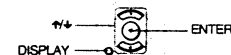
Depending on the DVD VIDEO, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. You also may not be able to turn them off.

Adjusting the Picture Quality (BNR)

DVD-V DVD-RW

VCD

The Block Noise Reduction (BNR) function adjusts the picture quality by reducing the "block noise" or mosaic like patterns that appear on your TV screen.

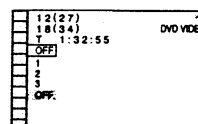


- 1 Press DISPLAY twice during playback.

The Control Menu appears.

- 2 Press (BNR), then press ENTER.

The options for "BNR" appear.



- 3 Press (BNR) to select a level.

- 1: reduces the "block noise."
- 2: reduces the "block noise" more than 1.
- 3: reduces the "block noise" more than 2.

- 4 Press ENTER.

The disc plays with the setting you selected.

To cancel the "BNR" setting
Select "OFF" in step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Notes

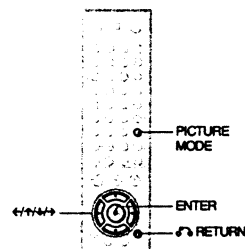
- If the outlines of the images on your screen should become blurred, set "BNR" to "OFF."
- Depending on the disc or the scene being played, there may be no "BNR" effect, or it may be hard to discern.

Adjusting the Playback Picture (CUSTOM PICTURE MODE)

DVD-V DVD-RW VCD

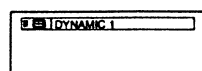
You can adjust the video signal of the DVD or VIDEO CD from the player to obtain the picture quality you want. Choose the setting that best suits the programme you are watching.

When you select "MEMORY," you can make further adjustments to each element of the picture (colour, brightness, etc.).



- 1 Press PICTURE MODE during playback.

The following display appears.



- 2 Press PICTURE MODE repeatedly to select the setting you want.

The default setting is underlined.
• STANDARD: displays a standard picture.
• DYNAMIC 1: produces a bold dynamic picture by increasing the picture contrast and the colour intensity.
• DYNAMIC 2: produces a more dynamic picture than DYNAMIC 1 by further increasing the picture contrast and the colour intensity.

Enjoying Movies

→ continued 59

- CINEMA 1: enhances details in dark areas by increasing the black level.
- CINEMA 2: White colours become brighter and black colours become richer, and the colour contrast is increased.
- MEMORY: adjusts the picture in greater detail.

Hints

- When you watch a movie, "CINEMA 1" or "CINEMA 2" is recommended.
- The picture can be adjusted by pressing the PICTURE MODE button on the player as well.
- You can also select "CUSTOM PICTURE MODE" from the Control Menu (page 12).

Adjusting the picture items in "MEMORY"

You can adjust each element of the picture individually.

- PICTURE: changes the contrast
- BRIGHTNESS: changes the overall brightness
- COLOR: makes the colour deeper or lighter
- HUE: changes the colour balance

- 1 Press PICTURE MODE repeatedly to select "MEMORY", then press ENTER.

The "PICTURE" adjustment bar appears.

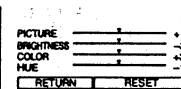


- 2 Press to adjust the picture contrast, then press ENTER.

The adjustment is saved, and "BRIGHTNESS" adjustment bar appears.

- 3 Repeat step 2 to adjust "BRIGHTNESS," "COLOR," and "HUE."

The Custom Picture Mode display appears. You can check each adjustment.



To turn off the display

Press RETURN, or select "RETURN" in step 3 and press ENTER.

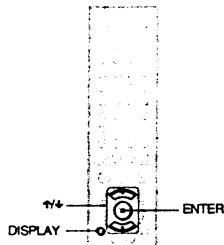
Hints

- To reset the picture items to the default values, press after step 3 to select "RESET" and press ENTER.
- When "PLAYBACK MEMORY" in "CUSTOM SETUP" is set to "ON" the player will save a single setting for up to 40 individual discs. (This does not apply to DVD-RWs in VR mode.)
- If you do not want to save the adjustment in step 2, you can go to the next picture adjustment by pressing without saving.

58

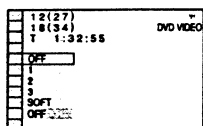
Enhancing the Playback Picture (DIGITAL VIDEO ENHANCER) DVD-V DVD-RW VCD

The Digital Video Enhancer (DVE) function makes the picture appear clear and crisp by enhancing the outlines of images on your TV screen. Also, this function can soften the images on the screen.



1 Press DISPLAY twice during playback.
The Control Menu appears.

2 Press +/- to select **[DVE]** (DIGITAL VIDEO ENHANCER), then press ENTER.
The options for "DIGITAL VIDEO ENHANCER" appear.



3 Press +/- to select a level.

- 1: enhances the outline.
- 2: enhances the outline more than 1.
- 3: enhances the outline more than 2.
- SOFT: softens the image (DVD only).

4 Press ENTER.

The disc plays with the setting you selected.

To cancel the "DIGITAL VIDEO ENHANCER" setting
Select "OFF" in step 3.

To turn off the Control Menu
Press DISPLAY repeatedly until the Control Menu is turned off.

Note

Depending on the disc or the scene being played, noise found in the disc may become more apparent. If this happens, it is recommended that you use the BNR function (page 58) with the DVE function. If the condition still does not improve, reduce the Digital Video Enhancer level, or select "SOFT" (DVD only) in step 3 above.

Enjoying Movies

Using Various Additional Functions

Locking Discs (CUSTOM PARENTAL CONTROL, PARENTAL CONTROL)

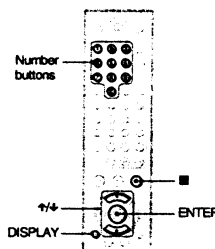
You can set two kinds of playback restrictions for the desired disc.

- Custom Parental Control
You can set playback restrictions so that the player will not play inappropriate discs.
- Parental Control
Playback of some DVD VIDEOS can be limited according to a predetermined level such as the age of the users. Scenes may be blocked or replaced with different scenes. The same password is used for both Parental Control and Custom Parental Control.

Custom Parental Control DVD-V

VCD DVD-RW

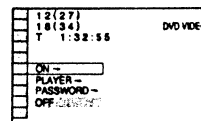
You can set the same Custom Parental Control password for up to 40 discs. When you set the 41st disc, the first disc is cancelled.



1 Insert the disc you want to lock.
If the disc is playing, press **[STOP]** to stop playback.

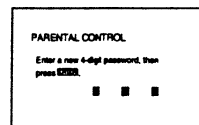
2 Press DISPLAY while the player is in stop mode.
The Control Menu appears.

3 Press +/- to select **[PARENTAL CONTROL]** (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.



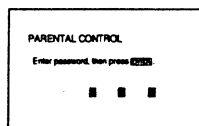
4 Press +/- to select "ON →," then press ENTER.

◆ If you have not entered a password The display for registering a new password appears.



Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

◆ When you have already registered a password
The display for entering the password appears.



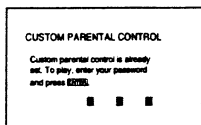
5 Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
"Custom parental control is set." appears and then the screen returns to the Control Menu.

To turn off the Custom Parental Control function

- Follow steps 1 through 3 of "Custom Parental Control."
- Press +/- to select "OFF →," then press ENTER.
- Enter your 4-digit password using the number buttons, then press ENTER.

To play a disc for which Custom Parental Control is set

- Insert the disc for which Custom Parental Control is set.
The "CUSTOM PARENTAL CONTROL" display appears.



- Enter your 4-digit password using the number buttons, then press ENTER.
The player is ready for playback.

Hint

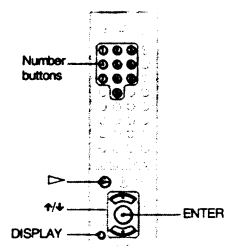
If you forget your password, enter the 6-digit number "199703" using the number buttons when the "CUSTOM PARENTAL CONTROL" display asks you for your password, then press ENTER. The display will ask you to enter a new 4-digit password.

Note

Once you set Custom Parental Control with a recorded disc such as a DVD-RW, the display for entering the password may appear again when you insert a different recorded disc. Input the password to play the disc.

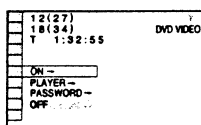
Parental Control (limited playback) DVD-V

Playback of some DVD VIDEOS can be limited according to a predetermined level such as the age of the users. The "PARENTAL CONTROL" function allows you to set a playback limitation level.



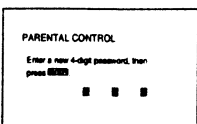
- Press DISPLAY while the player is in stop mode.
The Control Menu appears.

- Press +/- to select **[PARENTAL CONTROL]** (PARENTAL CONTROL), then press ENTER.
The options for "PARENTAL CONTROL" appear.



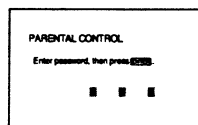
- Press +/- to select "PLAYER →," then press ENTER.

◆ If you have not entered a password
The display for registering a new password appears.

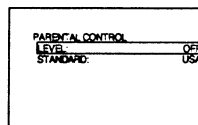


Enter a 4-digit password using the number buttons, then press ENTER.
The display for confirming the password appears.

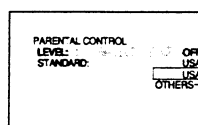
◆ When you have already registered a password
The display for entering the password appears.



- Enter or re-enter your 4-digit password using the number buttons, then press ENTER.
The display for setting the playback limitation level appears.



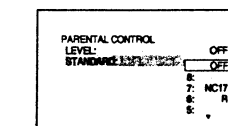
- Press +/- to select "STANDARD," then press ENTER.
The selection items for "STANDARD" are displayed.



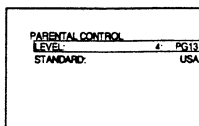
- Press +/- to select a geographic area as the playback limitation level, then press ENTER.
The area is selected.

When you select "OTHERS →," select and enter a standard code in the table on page 65 using the number buttons.

- Press +/- to select "LEVEL," then press ENTER.
The selection items for "LEVEL" are displayed.



- Select the level you want using +/-, then press ENTER.
Parental Control setting is complete.



The lower the value, the stricter the limitation.

To turn off the Parental Control function
Set "LEVEL" to "OFF" in step 8.

To play a disc for which Parental Control is set

- Insert the disc and press **[PLAY]**.
The display for entering your password appears.
- Enter your 4-digit password using the number buttons, then press ENTER.
The player starts playback.

Hint

If you forget your password, remove the disc and repeat steps 1 to 3 of "Parental Control (limited playback)." When you are asked to enter your password, enter "199703" using the number buttons, then press ENTER. The display will ask you to enter a new 4-digit password. After you enter a new 4-digit password, replace the disc in the player and press **[PLAY]**. When the display for entering your password appears, enter your new password.

Notes

- When you play discs which do not have the Parental Control function, playback cannot be limited on this player.

• Depending on the disc, you may be asked to change the parental control level while playing the disc. In this case, enter your password, then change the level. If the Resume Play mode is cancelled, the level returns to the previous level.

Area Code

Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2079
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Thailand	2528
United Kingdom	2184

Changing the password

- 1 Press **STOP** while the player is in stop mode.
The Control Menu appears.
- 2 Press **ENTER** to select **(PARENTAL CONTROL)**, then press **ENTER**.
The options for "PARENTAL CONTROL" appear.
- 3 Press **ENTER** to select "PASSWORD", then press **ENTER**.
The display for entering the password appears.
- 4 Enter your 4-digit password using the number buttons, then press **ENTER**.
- 5 Enter a new 4-digit password using the number buttons, then press **ENTER**.
- 6 To confirm your password, re-enter it using the number buttons, then press **ENTER**.

If you make a mistake entering your password

Press **ENTER** before you press **ENTER** and input the correct number.

If you make a mistake

Press **RETURN**.

To turn off the display

Press **DISPLAY** repeatedly until the display is turned off.

Using Various Additional Functions

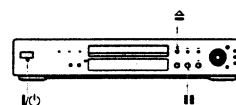
Operation Sound Effects

(Sound Feedback)

The player beeps when the following operations are performed.
The default setting of the Sound Feedback function is set to off.

Operation	Operation sound
Power is turned on	One beep
Power is turned off	Two beeps
ENTER is pressed	One beep
STOP is pressed	Two beeps
Playback is stopped	One long beep
Operation is not possible	Three beeps

Setting Sound Feedback



- 1 Press **I/O** on the player or the remote.
When there is a disc in the player, press **II** and remove the disc. Then press **II** again to close the disc tray.
- 2 Press and hold **II** on the player for more than two seconds.
You will hear one beep and the Sound Feedback function is turned on.

To turn off the Sound Feedback function

When there is no disc in the player, press and hold **II** on the player for more than two seconds. You will hear two beeps and the Sound Feedback function is turned off.

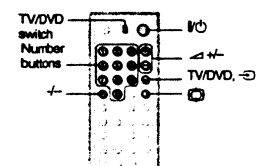
Controlling Your TV or AV Amplifier (Receiver) With the Supplied Remote

By adjusting the remote signal, you can control your TV with the supplied remote. If you connect the player to an AV amplifier (receiver), you can control the volume with the supplied remote.

Notes

- Depending on the connected unit, you may not be able to control your TV or AV amplifier (receiver) using some of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number you have set may be reset to the default setting. Set the appropriate code number again.

Controlling TVs with the remote



- 1 Slide the TV/DVD switch to TV.
- 2 Hold down **I/O**, and enter your TV's manufacturer code (see "Code numbers of controllable TVs" below) using the number buttons.
- 3 Release **I/O**.
When the TV/DVD switch is set to TV, the remote performs the following:

I/O	Turns the TV on or off
Δ (volume) +/−	Adjusts the volume of the TV
⊞ (wide mode)	Switches to or from the wide mode of a wide TV

⇒ (TV/video) Switches the TV's input source between the TV and other input sources.
The button works even if the TV/DVD switch is set to DVD.

Number buttons, 1-9 Selects the programme position of the TV.
TV/DVD** Switches the TV's input source between the TV and player.
The button works even if the TV/DVD switch is set to DVD.

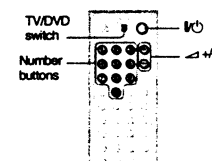
- * If you use number buttons to select the TV's programme position, press **1-9** followed by the number buttons for two-digit numbers.
- ** If you connect the player to the TV via the SCART (EURO AV) jacks, the input source for the TV is set to the player automatically when you start playback. In this case, press TV/DVD to return the input to the TV.

Code numbers of controllable TVs
If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony (default)	01
Aiwa (default)	01
Grundig	11
Hitachi	24
Loewe	08, 45
Nokia	15, 16, 69
Panasonic	17, 49
Philips	06, 07, 08
Saba	12, 13
Samsung	22, 23
Sanyo	25
Sharp	29
Telefunken	36
Thomson	43
Toshiba	38

Using Various Additional Functions

Controlling the volume of your AV amplifier (receiver) with the remote



- 1 Slide the TV/DVD switch to DVD.
- 2 Hold down **I/O**, and enter your AV amplifier (receiver)'s manufacturer's code (see the table below) using the number buttons.
- 3 Release **I/O**.
The **Δ +/−** buttons control the AV amplifier's volume.
♦ If you want to control the TV's volume
Slide the TV/DVD switch to TV.

Code numbers of controllable AV amplifiers (receivers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifier (receiver).

Manufacturer	Code number
Sony	80, 88, 89, 91
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

Hint

If you want to control the TV's volume even when the TV/DVD switch is set to DVD, repeat steps above and enter the code number 90 (default).

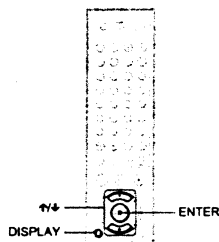
Settings and Adjustments

Using the Setup Display

By using the Setup Display, you can make various adjustments to items such as picture and sound. You can also set a language for the subtitles and the Setup Display, among other things. For details on each Setup Display item, see pages from 70 to 78.

Note

Playback settings stored in the disc take priority over the Setup Display settings and not all the functions described may work.

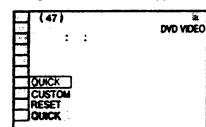


- 1 Press **DISPLAY** when the player is in stop mode.

The Control Menu appears.

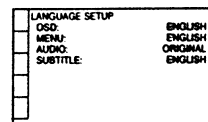
- 2 Press **↑/↓** to select **SETUP**, then press **ENTER**.

The options for "SETUP" appear.



- 3 Press **↑/↓** to select "CUSTOM," then press **ENTER**.

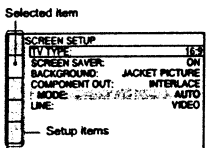
The Setup Display appears.



- 4 Press **↑/↓** to select the setup item from the displayed list:

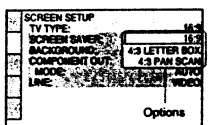
"LANGUAGE SETUP," "SCREEN SETUP," "CUSTOM SETUP," "AUDIO SETUP," or "SPEAKER SETUP." Then press **ENTER**.

The Setup item is selected.
Example: "SCREEN SETUP"



- 5 Select an item using **↑/↓**, then press **ENTER**.

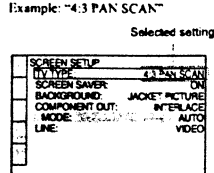
The options for the selected item appear.
Example: "TV TYPE"



Settings and Adjustments

- 6 Select a setting using **↑/↓**, then press **ENTER**.

The setting is selected and setup is complete.
Example: "4:3 PAN SCAN"



To turn off the display

Press **DISPLAY** repeatedly until the display is turned off.

To enter the Quick Setup mode

Select "QUICK" in step 3. Follow from step 5 of the Quick Setup explanation to make basic adjustments (page 26).

To reset all the "SETUP" settings

- 1 Select "RESET" in step 3 and press **ENTER**.
- 2 Select "YES" using **↑/↓**.
You can also quit the process and return to the Control Menu by selecting "NO" here.
- 3 Press **ENTER**.
All the settings explained on pages 70 to 78 return to the default settings. Do not press **⏏** while resetting the player, which takes a few seconds to complete.

Setting the Display or Sound Track Language (LANGUAGE SETUP)

"LANGUAGE SETUP" allows you to set various languages for the on-screen display or sound track.

Select "LANGUAGE SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 69).



◆ OSD (On-Screen Display)

Switches the display language on the screen.

◆ MENU (DVD VIDEO only)

You can select the desired language for the disc's menu.

◆ AUDIO (DVD VIDEO only)

Switches the language of the sound track. When you select "ORIGINAL," the language given priority in the disc is selected.

◆ SUBTITLE (DVD VIDEO only)

Switches the language of the subtitle recorded on the DVD VIDEO. When you select "AUDIO FOLLOW," the language for the subtitles changes according to the language you selected for the sound track.

Hint

If you select "OTHERS" in "MENU," "SUBTITLE," or "AUDIO," select and enter a language code from "Language Code List" on page 86 using the number buttons.

Note

When you select a language in "MENU," "SUBTITLE," or "AUDIO" that is not recorded on a DVD VIDEO, one of the recorded languages will be automatically selected.

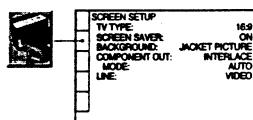
→ continued 69

70

Settings for the Display (SCREEN SETUP)

Choose settings according to the TV to be connected.

Select "SCREEN SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 69). The default settings are underlined.



◆ TV TYPE

Selects the aspect ratio of the connected TV (4:3 standard or wide).

16:9	Select this when you connect a wide-screen TV or a TV with a wide mode function.
4:3 LETTER BOX	Select this when you connect a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 PAN SCAN	Select this when you connect a 4:3 screen TV. Automatically displays a wide picture on the entire screen and cuts off the portions that do not fit.

16:9



4:3 LETTER BOX



4:3 PAN SCAN



Note

Depending on the DVD, "4:3 LETTER BOX" may be selected automatically instead of "4:3 PAN SCAN" or vice versa.

◆ SCREEN SAVER

The screen saver image appears when you leave the player in pause or stop mode for 15 minutes, or when you play back a Super Audio CD, CD, or DATA CD (MP3 audio) for more than 15 minutes. The screen saver will help prevent your display device from becoming damaged (ghosting). Press **⏏** to turn off the screen saver.

ON	Turns on the screen saver.
OFF	Turns off the screen saver.

◆ BACKGROUND

Selects the background colour or picture on the TV screen in stop mode or while playing a Super Audio CD, CD, or DATA CD (MP3 audio).

JACKET PICTURE	The jacket picture (still picture) appears, but only when the jacket picture is already recorded on the disc (CD-EXTRA, etc.). If the disc does not contain a jacket picture, the "GRAPHICS" picture appears.
GRAPHICS	A preset picture stored in the player appears.
BLUE	The background colour is blue.
BLACK	The background colour is black.

◆ COMPONENT OUT

This will change the type of signal output from the COMPONENT VIDEO OUT jacks when the COMPONENT VIDEO OUT/SCAN SELECT switch on the rear panel of the player is set to SELECTABLE. See page 72 for more information about the different types.

INTERLACE	Select this when you are connected to a standard (interlace format) TV.
PROGRESSIVE	Select this when you have a TV that can accept progressive signals.
OFF	The player outputs no component video signals.

Settings and Adjustments

Hint

When the player outputs progressive signals, the PROGRESSIVE indicator lights up.

About the COMPONENT VIDEO OUT/SCAN SELECT switch

The COMPONENT VIDEO OUT/SCAN SELECT switch on the rear panel of the player selects the signal output from the COMPONENT VIDEO OUT jacks: interlace, progressive or selectable. The switch takes priority over the setting made in "COMPONENT OUT."

To switch the video signal format

If you have selected "PROGRESSIVE" for a TV that does not accept signals in progressive signals, or if the software's video signals are not suited for progressive video signal conversion, view the image in Interlace format.

- 1 Set the COMPONENT VIDEO OUT/SCAN SELECT switch on the rear panel of the player to "INTERLACE."
- 2 Set "COMPONENT OUT" to "INTERLACE."
- 3 Reset the COMPONENT VIDEO OUT/SCAN SELECT switch to "SELECTABLE."
Normally leave the switch in this position when using the COMPONENT VIDEO OUT jacks.

Notes

- When you connect the player to a monitor or projector via only the COMPONENT VIDEO OUT jacks, do not select "OFF." If you select "OFF" in this case, the picture may not appear.
- When you play video based software with progressive signals, sections of some types of images may appear unnatural due to the conversion process when output through the COMPONENT VIDEO OUT jacks. Images from the S VIDEO OUT and LINE OUT (VIDEO) jacks are unaffected as they are output in the normal (interlace) format.

When "PROGRESSIVE" is selected in "COMPONENT OUT"

You can fine-tune the Progressive 525p/625p video signal output when you select "PROGRESSIVE" in "COMPONENT OUT" of the "SCREEN SETUP" display and connect the player to the TV that is able to accept the video signal in progressive format.

◆ MODE (Conversion Modes)

DVD software can be divided into two types: film based software and video based software. Video based software is derived from TV, such as dramas and sitcoms, and displays images at 30 frames/60 fields (25 frames/50 fields) per second. Film based software is derived from film and displays images at 24 frames per second. Some DVD software contains both Video and Film. In order for these images to appear natural on your screen when output in PROGRESSIVE mode (50 or 60 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching.

AUTO	This will automatically detect if you are playing Film based or Video based software and convert the signal to the appropriate conversion mode. Normally select this position.
VIDEO	This will set the conversion mode for Video based software, regardless of the type of software that you are playing.

Note

When you play video based software with progressive signals, sections of some types of images may appear unnatural due to the conversion process when output through the COMPONENT VIDEO OUT jacks. Images from the S VIDEO OUT and LINE OUT (VIDEO) jacks are unaffected as they are output in the interlace format.

◆ LINE

Selects the method of outputting video signals from the LINE 1 (RGB) TV-jack on the rear panel of the player.

VIDEO	Outputs video signals.
S VIDEO	Outputs S video signals.
RGB	Outputs RGB signals.

Notes

- If your TV does not conform to the S VIDEO or the RGB signals, no picture appears on the TV screen even if you select "S VIDEO" or "RGB." Refer to the instructions supplied with your TV.
- If your TV has only one SCART (EURO AV) jack, do not select "S VIDEO."

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- When "INTERLACE" or "PROGRESSIVE" is selected in "COMPONENT OUT," you cannot select "RGB."
- If you select "RGB" and then set the COMPONENT VIDEO OUT/SCAN SELECT switch on the rear panel of the player to INTERLACE or PROGRESSIVE (page 71), the output signal will switch to "VIDEO."

Custom Settings (CUSTOM SETUP)

Use this to set up playback related and other settings.

Select "CUSTOM SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 69). The default settings are underlined.

CUSTOM SETUP	
AUTO PLAY	OFF
DIMMER	BRIGHT
PAUSE MODE	AUTO
PLAYBACK MEMORY	ON
TRACK SELECTION	ON
MULTI-DISC RESUME	OFF
CD DIRECT	OFF

◆ AUTO PLAY

Switches the Auto Play setting on or off. This function is useful when the player is connected to a timer (not supplied).

OFF	Switches this function off.
ON	Automatically starts playback when the player is turned on.

◆ DIMMER

Adjusts the lighting of the front panel display.

BRIGHT	Makes the lighting bright.
DARK	Makes the lighting dark.
AUTO DARK	Makes the lighting dark if you do not operate the player or remote for a short while.

◆ PAUSE MODE (DVD VIDEO/DVD-RW only)

Selects the picture in pause mode.

AUTO	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
FRAME	The picture, including subjects that do not move dynamically, is output in high resolution.

Settings and Adjustments

◆ PLAYBACK MEMORY (DVD VIDEO/VIDEO CD only)

The player can store "SUBTITLE" and other settings of each disc for up to 40 discs (Playback Memory). Set this function "ON" or "OFF."

ON	Stores the settings in memory when you eject the disc.
OFF	Does not store the settings in memory.

The following settings are stored in memory.

- ANGLE (page 57)*
- AUDIO (page 52)*
- BNR (page 58)
- DIGITAL VIDEO ENHANCER (page 61)
- SUBTITLE (page 57)*
- CUSTOM PICTURE MODE (page 59)

* DVD VIDEO only

Note

The player can store the settings of up to 40 discs. When you store the setting of disc number 41, the first disc setting is cancelled.

◆ TRACK SELECTION (DVD VIDEO only)

Gives the sound track which contains the highest number of channels priority when you play a DVD VIDEO on which multiple audio formats (PCM, MPEG audio, DTS, or Dolby Digital format) are recorded.

OFF	No priority given.
AUTO	Priority given.

Notes

- When you set the item to "AUTO," the language may change. The "TRACK SELECTION" setting has higher priority than the "AUDIO" settings in "LANGUAGE SETUP" (page 70).
- If PCM, MPEG audio, DTS, and Dolby Digital sound tracks have the same number of channels, the player selects PCM, MPEG audio, DTS, and Dolby Digital sound tracks in this order.

◆ MULTI-DISC RESUME (DVD VIDEO/VIDEO CD only)

Switches the Multi-disc Resume setting on or off. Resume playback point can be stored in memory for up to 40 different DVD VIDEO/VIDEO CD discs (page 32).

ON	Stores the resume settings in memory for up to 40 discs (The settings remain in memory even if you select OFF.)
OFF	Does not store the resume settings in memory. Playback restarts at the resume point only for the current disc in the player.

◆ CD DIRECT

Eliminates the use of unnecessary circuits when playing CDs. This setting will be activated when you open or close the disc tray.

This function affects the output from the following jacks:

- LINE OUT L/R (AUDIO) jacks
- LINE 1 (RGB)-TV jack
- 5.1CH OUTPUT jacks

OFF	Select this when playing CD discs, including CDs with DTS tracks.
ON	Eliminates the use of unnecessary circuits needed to play CDs.

Note

If you select "ON" when playing CDs with DTS tracks, the sound will become noisy.

Settings for the Sound (AUDIO SETUP)

"AUDIO SETUP" allows you to set the sound according to the playback and connection conditions.

Select "AUDIO SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 69). The default settings are underlined.

AUDIO SETUP	
AUDIO ATT:	OFF
AUDIO DRC:	STANDARD
AUDIO FILTER:	SHARP
DOWNMIX:	DOLBY SURROUND
DIGITAL OUT:	ON
DOLBY DIGITAL:	D-PCM
MPEG:	PCM
DTS:	D-PCM
48kHz/96kHz PCM:	48kHz/16bit

◆ AUDIO ATT (attenuation)

If the playback sound is distorted, set this item to "ON." The player reduces the audio output level.

This function affects the output of the following jacks:

- LINE OUT L/R (AUDIO) jacks
- LINE 1 (RGB)-TV jack
- 5.1CH OUTPUT jacks

OFF	Normally select this position.
ON	Select this when the playback sound from the speakers is distorted.

◆ AUDIO DRC (Dynamic Range Control) (DVD VIDEO/DVD-RW only)

Makes the sound clear when the volume is turned down when playing a DVD that conforms to "AUDIO DRC."

This function affects the output from the following jacks:

- LINE OUT L/R (AUDIO) jacks
- LINE 1 (RGB)-TV jack
- 5.1CH OUTPUT jacks
- DIGITAL OUT (OPTICAL or COAXIAL) jack only when "DOLBY DIGITAL" is set to "D-PCM" (page 76).

STANDARD	Normally select this position.
TV MODE	Makes the low sounds clear even if you turn the volume down.

WIDE RANGE	Gives you the feeling of being at a live performance.
------------	---

◆ AUDIO FILTER (except Super Audio CD)
Selects the digital filter to reduce noise above 22.05 kHz (Sampling frequency (Fs) of the audio source is 44.1 kHz), 24 kHz (Fs is 48 kHz), or 48 kHz (Fs is above 96 kHz).

SHARP	Provides a wide frequency range and spatial feeling.
SLOW	Provides smooth and warm sound.

Note

There may be little effect by changing the digital filter depending on discs or playback environment.

◆ DOWNMIX (DVD VIDEO/DVD-RW only)

Switches the method for mixing down to 2 channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital or DTS format. For details on the rear signal components, see "Displaying the audio information of the disc" (page 53).

This function affects the output from the following jacks:

- LINE OUT L/R (AUDIO) jacks
- LINE 1 (RGB)-TV jack
- DIGITAL OUT (OPTICAL or COAXIAL) jack when "DOLBY DIGITAL" and "DTS" are set to "D-PCM" (page 76).

DOLBY SURROUND	Normally, select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
NORMAL	Multi-channel audio signals are downmixed to two channels for use with your stereo.

◆ DIGITAL OUT

Select this if audio signals are to be output via the DIGITAL OUT (OPTICAL or COAXIAL) jack.

ON	Normally select this position. When you select "ON," see "Setting the digital output signal" for further settings.
OFF	The influence of the digital circuit upon the analog circuit is minimal.

Settings and Adjustments

Note

Super Audio CD audio signals are not output from a digital jack.

Setting the digital output signal

Switches the method of outputting audio signals when you connect a component such as an amplifier (receiver) or MD deck with a digital input jack.

For connection details, see page 19. Select "DOLBY DIGITAL," "MPEG," "DTS," and "48kHz/96kHz PCM" after setting "DIGITAL OUT" to "ON."

AUDIO SETUP	
AUDIO ATT:	OFF
AUDIO DRC:	STANDARD
AUDIO FILTER:	SHARP
DOWNMIX:	DOLBY SURROUND
DIGITAL OUT:	ON
DOLBY DIGITAL:	D-PCM
MPEG:	PCM
DTS:	D-PCM
48kHz/96kHz PCM:	48kHz/16bit

If you connect a component that does not conform to the selected audio signal, a loud noise (or no sound) will come out from the speakers, damaging your ears or speakers.

◆ DOLBY DIGITAL (DVD VIDEO/DVD-RW only)

Selects the type of Dolby Digital signal.

D-PCM	Select this when the player is connected to an audio component without a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "DOWNMIX" item in "AUDIO SETUP" (page 75).
DOLBY DIGITAL	Select this when the player is connected to an audio component with a built-in Dolby Digital decoder.

◆ MPEG (DVD VIDEO/DVD-RW only)
Selects the type of MPEG audio signal.

PCM	Select this when the player is connected to an audio component without a built-in MPEG decoder. If you play MPEG audio sound tracks, the player outputs stereo signals via the DIGITAL OUT (OPTICAL or COAXIAL) jack.
MPEG	Select this when the player is connected to an audio component with a built-in MPEG decoder.

◆ DTS (DVD VIDEO only)

Selects the type of DTS signal.

D-PCM	Select this when the player is connected to an audio component without a built-in DTS decoder. If you play DTS audio sound tracks, the player outputs stereo signals via the DIGITAL OUT (OPTICAL or COAXIAL) jacks.
DTS	Select this when the player is connected to an audio component with a built-in DTS decoder.

◆ 48kHz/96kHz PCM (DVD VIDEO only)
Selects the sampling frequency of the audio signal.

48kHz/16bit	The audio signals of DVD VIDEOs are always converted to 48 kHz/16 bit.
96kHz/24bit	All types of signals including 96 kHz/24 bit are output in their original format. However, if the signal is encrypted for copyright protection purposes, the signal is only output as 48 kHz/16 bit.

Notes

- Even if you set "48kHz/96kHz PCM" to "96kHz/24bit," the sampling frequency is converted to 48 kHz/16 bit when a "SURROUND" mode (page 54) is selected.
- The analog audio signals from the LINE OUT L/R (AUDIO) jacks and 5.1CH OUTPUT jacks are not affected by this setting and keep their original sampling frequency level.

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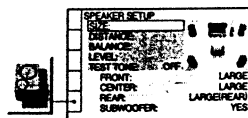
⇒ continued 75

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Settings for the Speakers (SPEAKER SETUP)

To obtain the best possible surround sound, set the size of the speakers you have connected and their distance from your listening position. Then use the test tone to adjust the volume and the balance of the speakers to the same level. This setting is effective when connecting the speaker with 5.1CH OUTPUT jacks (page 24).

Select "SPEAKER SETUP" in the Setup Display. To use the display, see "Using the Setup Display" (page 69). The default settings are underlined.



To return to the default setting

Select the item, then press CLEAR. Note that only the "SIZE" setting does not return to the default setting.

- ◆ **SIZE**
Selects the size of the speakers.
- ◆ **FRONT**

LARGE	Normally select this position.
SMALL	Select this when the sound distorts or the surround effects are difficult to hear.

◆ CENTER

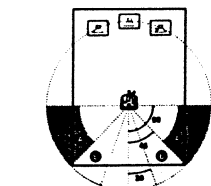
LARGE	Normally select this position.
SMALL	Select this when the sound distorts or the surround effects are difficult to hear.
NONE	Select this if you do not connect a centre speaker.

◆ REAR

LARGE	(REAR/SIDE): Normally select this position. Select according to the rear speaker position*.
-------	---

SMALL...	(REAR/SIDE): Select this when the sound distorts or the surround effects are difficult to hear. Select according to the rear speaker position*.
NONE	Select this if you do not connect rear speakers.

* Rear speaker position
Correctly specify the location of the rear speakers to enjoy the surround effect.
◆ Set to "SIDE" if the location of the rear speakers corresponds to section ② below.
◆ Set to "REAR" if the location of the rear speakers corresponds to section ③ below.
This setting affects only "VIRTUAL REAR SHIELD", "VIRTUAL MULTI REAR" and "VIRTUAL MULTI DIMENSION" mode (page 55). This setting does not affect the Super Audio CD Multi audio signals.



◆ SUBWOOFER

YES	Select this if you connect a subwoofer to output the LFE (low frequency effect) signals from the subwoofer.
NONE	Select this if you do not connect a subwoofer.

Notes

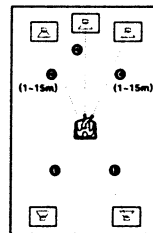
- ◆ The cut off frequency for the subwoofer is fixed at 120 Hz.
- ◆ If your speakers are too small to reproduce low bass frequencies, utilize a subwoofer for low frequency sound. When you set all speaker settings to "SMALL", the bass reduction circuitry will be activated and the bass frequencies are output from the subwoofer.
- ◆ Even if there are fewer than 6 speakers connected, the player distributes the audio signal components to the front speakers.

◆ DISTANCE

Sets the distance from your listening position to the speakers.
Set the distance to your front speakers in "FRONT" first (②). Values in "CENTER"

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(centre speaker) and "REAR" (rear speaker) will automatically change to the same value (② and ③). Adjust these values to reflect the actual distance to your centre and rear speakers.



Be sure to change the value in the Setup Display when you move the speakers. The default adjustments are in parentheses.

FRONT (3 m)	Set this between 1 and 15 metres in 0.2 metre increments.
CENTER (3 m)	Set this within -1.6 and +0.6 metres of the "FRONT" setting in 0.2 metre increments. For example, if "FRONT" is set to 6 metres, "CENTER" can be set between 4.4 and 6.6 metres.
REAR (3 m)	Set this between the "FRONT" setting and -5 metres in 0.2 metre increments. For example, if "FRONT" is set to 6 metres, "REAR" can be set between 1 and 6 metres.

Notes

- ◆ If each of the front or rear speakers are not placed at an equal distance from your listening position, set the distance according to the closest speaker.
- ◆ Do not place the rear speakers farther away from your listening position than the front speakers.
- ◆ These settings do not affect the Super Audio CD Multi audio signals.

◆ BALANCE

Varies the balance of the left and right speakers. Be sure to set "TEST TONE" to "ON" for easy adjustment. The default adjustments are in parentheses.

FRONT (0 dB)	Set this between -6 dB (L) and +6 dB (R) (0.5 dB increments).
--------------	---

REAR (0 dB)	Set this between -6 dB (L) and +6 dB (R) (0.5 dB increments).
-------------	---

◆ LEVEL

Varies the level of each speaker. Be sure to set "TEST TONE" to "ON" for easy adjustment. The default adjustments are in parentheses.

FRONT (0 dB)	Set this between -6 dB and 0 dB (0.5 dB increments).
CENTER (0 dB)	Set this between -12 dB and 0 dB (0.5 dB increments).
REAR (0 dB)	Set this between -12 dB and 0 dB (0.5 dB increments).
SUBWOOFER (0 dB)	Set this between -10 dB and +10 dB (0.5 dB increments).

To adjust the volume of all the speakers at one time

Use the amplifier's (receiver's) volume control.

◆ TEST TONE

The speakers will emit a test tone. Use this when you use the 5.1CH OUTPUT jacks and adjust the "BALANCE" and "LEVEL".

OFF	The test tone is not emitted from the speakers.
ON	The test tone is emitted from each speaker in sequence while adjusting balance or level.

Adjusting the speaker volume and level

- 1 Select "SPEAKER SETUP" in the Setup Display.
- 2 Select "TEST TONE" and set to "ON." You will hear the test tone from each speaker in sequence.
- 3 From your listening position, select "BALANCE" or "LEVEL" and adjust the value of "BALANCE" using <-> and "LEVEL" using +/-.
- 4 Select "TEST TONE" and set to "OFF" to turn off the test tone.

Note

The test tone signals are not output from the digital jack.

Additional Information

Troubleshooting

If you experience any of the following difficulties while using the player, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power is not turned on.

- Check that the mains lead is connected securely.

Picture

There is no picture/picture noise appears.

- Re-connect the connecting cord securely.
- The connecting cords are damaged.
- Check the connection to your TV (page 16) and switch the input selector on your TV so that the signal from the player appears on the TV screen.
- In the Setup Display, set "LINE" in "SCREEN SETUP" to the appropriate item that conforms to your system (page 72).
- The disc is dirty or flawed.
- If the picture output from your player goes through your VCR to get to your TV or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programmes could affect picture quality. If you still experience problems even when you connect your player directly to your TV, please try connecting your player to your TV's S VIDEO input (page 16).
- You are playing a disc recorded in a colour system that is different from your TV.
- If the colour system of your player does not match with that of your TV, change the colour system of the player. For details, see page 17. (You cannot change the colour system of the DVD disc itself.)
- You have set "COMPONENT OUT" in "SCREEN SETUP" to "PROGRESSIVE" even though your TV cannot accept the signal in progressive format. In this case, set the COMPONENT VIDEO OUT/SCAN SELECT switch on the back panel of the

player to INTERLACE. Then set "COMPONENT OUT" to "INTERLACE" after you can see the TV screen correctly, and reset the COMPONENT VIDEO OUT/SCAN SELECT switch to SELECTABLE.

- Even if your TV is compatible with progressive format 525p/625p signals, the image may be affected when you set "COMPONENT OUT" to "PROGRESSIVE." In this case, set "COMPONENT OUT" to "INTERLACE."

Even though you set the aspect ratio in "TV TYPE" of "SCREEN SETUP," the picture does not fill the screen.

- The aspect ratio of the disc is fixed on your DVD.

The picture is black and white.

- In the Setup Display, set "LINE" in "SCREEN SETUP" to the appropriate item that conforms to your TV (page 72).
- Depending on the TV, the picture on the screen becomes black and white when you play a disc recorded in the NTSC colour system.

Sound

There is no sound.

- Re-connect the connecting cord securely.
- The connecting cord is damaged.
- The player is connected to the wrong input jack on the amplifier (receiver) (page 22, 23, 24).
- The amplifier (receiver) input is not correctly set.
- The player is in pause mode or in Slow-motion Play mode.
- The player is in fast forward or fast reverse mode.
- If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jack, check the audio settings (page 75).
- Super Audio CD audio signals are not output from the digital jack.
- While playing a Super VCD on which the audio track 2 is not recorded, no sound will come out when you select "2:STEREO," "2:1/L," or "2:2/R."

Additional Information

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Sound distortion occurs.

- Set "AUDIO ATT" in "AUDIO SETUP" to "ON" (page 75).

The sound volume is low.

- The sound volume is low on some DVDs. The sound volume may improve if you set "AUDIO DRC" to "TV MODE" (page 75).
- Set "AUDIO ATT" in "AUDIO SETUP" to "OFF" (page 75).

The surround effect is difficult to hear when you are playing a Dolby Digital, DTS, or MPEG audio sound track.

- Check the speaker connections and setting (page 24, 26, 76).
- The 5.1 channel sound is not recorded on the disc being played.

The sound comes from the centre speaker only.

- Depending on the disc, the sound may come from the centre speaker only.
- Set "SURROUND" to "OFF" (page 54).

Operation

The remote does not function.

- The batteries in the remote are weak.
- There are obstacles between the remote and the player.
- The distance between the remote and the player is too far.
- The remote is not pointed at the remote sensor on the player.

The disc does not play.

- The disc is turned over.
- Insert the disc with the playback side facing down on the disc tray.
- The disc is skewed.
- The player cannot play certain discs (page 6).
- The region code on the DVD does not match the player.
- Moisture has condensed inside the player (page 3).
- The player cannot play a recorded disc that is not correctly finalized (page 7).

The MP3 audio track cannot be played (page 37).

- The DATA CD is not recorded in the MP3 format that conforms to ISO9660 Level 1/Level 2 or Joliet.
- The MP3 audio track does not have the extension ".MP3."
- The data is not formatted in MP3 even though it has the extension ".MP3."
- The data is not MPEG1 Audio Layer 3 data.
- The player cannot play audio tracks in MP3PRO format.

"Copyright lock" appears and the screen turns blue when playing a DVD-RW disc.

- Images taken from digital broadcasts, etc., may contain copy protection signals, such as complete copy protection signals, single copy signals, and restriction-free signals. When images that contain copy protection signals are played, a blue screen may appear instead of the images. It may take a while when looking for playable images.

The title of the MP3 audio album or track is not correctly displayed.

- The player can only display numbers and alphabet. Other characters are displayed as "??".

The disc does not start playing from the beginning.

- Programme Play, Shuffle Play, Repeat Play, or A-B Repeat Play has been selected (page 38).
- Resume play has taken effect (page 32).

The player starts playing the disc automatically.

- The disc features an auto playback function.
- "AUTO PLAY" in "CUSTOM SETUP" is set to "ON" (page 73).

Playback stops automatically.

- While playing discs with an auto pause signal, the player stops playback at the auto pause signal.

You cannot perform some functions such as Stop, Search, Slow-motion Play, Repeat Play, Shuffle Play, or Programme Play.

→ Depending on the disc, you may not be able to do some of the operations above. See the operating manual that comes with the disc.

The language for the sound track cannot be changed.

→ Try using the DVD's menu instead of the direct selection button on the remote (page 33).
→ Multilingual tracks are not recorded on the DVD being played.
→ The DVD prohibits the changing of the language for the sound track.

The subtitle language cannot be changed or turned off.

→ Try using the DVD's menu instead of the direct selection button on the remote (page 33).
→ Multilingual subtitles are not recorded on the DVD being played.
→ The DVD prohibits the changing of the subtitles.

The angles cannot be changed.

→ Try using the DVD's menu instead of the direct selection button on the remote (page 33).
→ Multi-angles are not recorded on the DVD being played.
→ The angle can only be changed when the "ANGLE" indicator lights up on the front panel display (page 9).
→ The DVD prohibits changing of the angles.

The player does not operate properly.

→ When static electricity, etc., causes the player to operate abnormally, unplug the player.

5 numbers or letters are displayed on the screen and on the front panel display.

→ The self-diagnosis function was activated. (See the table on page 82.)

The disc tray does not open and "LOCKED" appears on the front panel display.

→ Child Lock is set (page 31).

The disc tray does not open and "TRAY LOCKED" appears on the front panel display.

→ Contact your Sony dealer or local authorized Sony service facility.

"Data error" appears on the TV screen when playing a DATA CD.

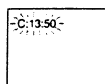
→ The MP3 audio track you want to play is broken.
→ The data is not MPEG1 Audio Layer 3 data.

Additional Information

Self-diagnosis Function

(When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the player from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four digits appears on the screen and the front panel display. In this case, check the following table.



First three characters of the service number	Cause and/or corrective action
C 13	The disc is dirty. → Clean the disc with a soft cloth (page 7).
C 31	The disc is not inserted correctly. → Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the player has performed the self-diagnosis function. → Contact your nearest Sony dealer or local authorized Sony service facility and give the 5-character service number. Example: E 61 10

Glossary

Chapter (page 9)

Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Dolby Digital (page 24, 76)

Digital audio compression technology developed by Dolby Laboratories. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same 5.1 discrete channels of high quality digital audio found in "Dolby Digital" theater surround sound systems. Good channel separation is realized because all of the channel data are recorded discretely and little deterioration is realized because all channel data processing is digital.

Dolby Surround (Pro Logic) (page 23)

Audio signal processing technology that Dolby Laboratories developed for surround sound. When the input signal contains a surround component, the Pro Logic process outputs the front, centre and rear signals. The rear channel is nonaural.

DTS (page 24, 76)

Digital audio compression technology that Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same 5.1 discrete channels of high quality digital audio. Good channel separation is realized because all of the channel data is recorded discretely and little deterioration is realized because all channel data processing is digital.

DVD VIDEO (page 6)

A disc that contains up to 8 hours of moving pictures even though its diameter is the same as a CD.

The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5

GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17 GB.

The picture data uses the MPEG2 format, one of the worldwide standards of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.

Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided with the DVD.

DVD-RW (page 6)

A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVD-RWs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD+RW (page 6)

A DVD+RW (plus RW) is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

Film based software, Video based software (page 71)

DVDs can be classified as Film based or Video based software. Film based DVDs contain the same images (24 frames per second) that are shown at movie theaters. Video based DVDs, such as television dramas or sit-coms, displays images at 30 frames/60 fields (25 frames/50 fields) per second.

Index (CD)/Video Index (VIDEO CD) (page 12)

A number that divides a track into sections to easily locate the point you want on a CD or VIDEO CD. Depending on the disc, no index may be recorded.

Interface format (page 71)

Interface format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

MPEG audio (page 24, 76)

International standard coding system used to compress audio digital signals authorized by ISO/IEC. MPEG 1 conforms to up to 2-channel stereo. MPEG 2, used on DVDs, conforms to up to 7.1-channel surround.

Progressive format (page 71)

Compared to the Interface format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interface format can show 25 or 30 frames (50-60 fields) in one second, the Progressive format can show 50-60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper. This player is compatible with the 525 or 625 progressive format.

Scene (page 9)

On a VIDEO CD with PBC (playback control) functions, the menu screens, moving pictures and still pictures are divided into sections called "scenes."

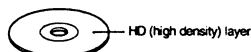
Super Audio CD (page 8)

A Super Audio CD disc can reproduce sounds that are extremely faithful to the original sound by use of DSD (Direct Stream Digital) technology. This technology utilizes a sampling frequency of 2.8224 MHz, which is 64 times that of a conventional CD, and 1-bit quantization that enables the disc to hold 4 times the amount of information that a standard PCM format CD can hold. Super Audio CDs are divided into the following types.

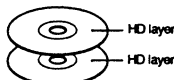
• Super Audio CD (single layer disc)
This disc consists of a single HD layer*.
*High density signal layer for the Super Audio CD

81

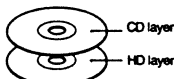
82



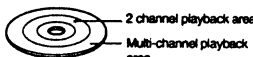
• Super Audio CD (dual layer disc)
This disc consists of dual HD layers and is capable of extended play over long periods. Also, as the dual layer disc consists of dual HD layers on one side only, you do not have to turn the disc over during playback.



• Super Audio CD + CD (Hybrid disc)
This disc consists of an HD layer and a CD layer. Also, as the dual layers are on one side only, you do not have to turn the disc over during playback. You can play the CD layer using a conventional CD player.



• 2 channel + Multi-channel Super Audio CD
This disc consists of the 2 channel playback area and the multi-channel playback area.



Title (page 9)

The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 9)

Sections of a picture or a music feature on a CD or VIDEO CD (the length of a song).

Additional Information

Language Code List

For details, see pages 52, 57, 70.

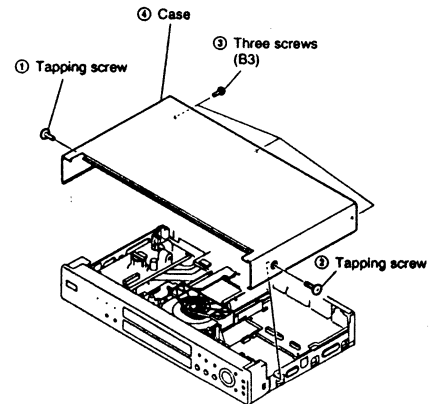
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code Language	Code Language	Code Language	Code Language
1027 Afar	1183 Insh	1347 Maori	1507 Samoan
1028 Abkhazian	1186 Scots Gaelic	1349 Macedonian	1508 Shona
1032 Afrikaans	1194 Galician	1350 Malayalam	1509 Somali
1039 Amharic	1196 Guarani	1352 Mongolian	1511 Albanian
1044 Arabic	1203 Gujarati	1353 Moldavian	1512 Serbian
1045 Assamese	1209 Hausa	1356 Marathi	1513 Siswati
1051 Aymara	1217 Hindi	1357 Malay	1514 Sesotho
1052 Azerbaijani	1226 Croatian	1358 Maltese	1515 Sundanese
1053 Bashkir	1229 Hungarian	1363 Burmese	1516 Swedish
1057 Byelorussian	1233 Armenian	1365 Nauru	1517 Swahili
1059 Bulgarian	1235 Interlingua	1369 Nepali	1521 Tamil
1060 Bihari	1239 Interlingue	1376 Dutch	1525 Telugu
1061 Bislama	1245 Inupiak	1379 Norwegian	1527 Tajik
1066 Bengali;	1248 Indonesian	1393 Occitan	1528 Thai
Bangla	1253 Icelandic	1403 (Afan)Oromo	1529 Tigrinya
1067 Tibetan	1254 Italian	1408 Oriya	1531 Turkmen
1070 Breton	1257 Hebrew	1417 Punjabi	1532 Tagalog
1079 Catalan	1261 Japanese	1428 Polish	1534 Setswana
1093 Corsican	1269 Yiddish	1435 Pashto;	1535 Tonga
1097 Czech	1283 Javanese	Pushto	1538 Turkish
1103 Welsh	1287 Georgian	1436 Portuguese	1539 Tsonga
1105 Danish	1297 Kazakh	1463 Quechua	1540 Tatar
1108 German	1298 Greenlandic	1481 Rhaeto-	1543 Twi
1130 Bhutani	1299 Cambodian	Romance	1557 Ukrainian
1142 Greek	1300 Kannada	1482 Krundi	1564 Urdu
1144 English	1301 Korean	1483 Romanian	1572 Uzbek
1145 Esperanto	1305 Kashmiri	1489 Russian	1581 Vietnamese
1149 Spanish	1307 Kurdish	1491 Kinyarwanda	1587 Volapük
1150 Estonian	1311 Kirghiz	1495 Sanskrit	1613 Wolof
1151 Basque	1313 Latin	1496 Sindhi	1632 Xhosa
1157 Persian	1326 Lingala	1501 Sangho	1665 Yoruba
1165 Finnish	1327 Laothian	1502 Serbo-	1684 Chinese
1166 Fiji	1332 Lithuanian	Croatian	1697 Zulu
1171 Faroese	1334 Latvian;	1503 Singhalese	
1174 French	Letish	1505 Slovak	
1181 Frisian	1345 Malagasy	1506 Slovenian	1703 Not specified

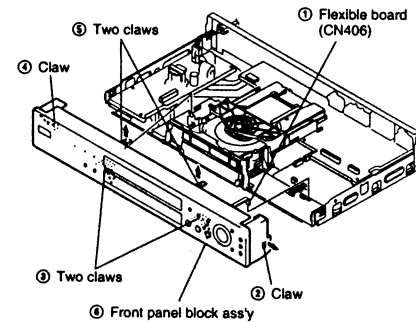
SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

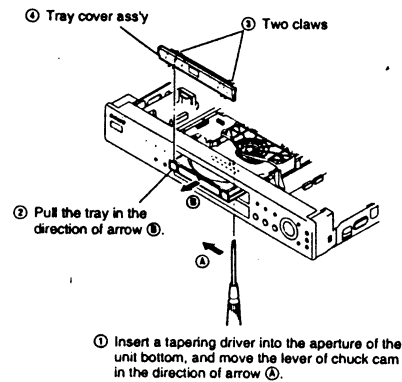
2-1. CASE REMOVAL



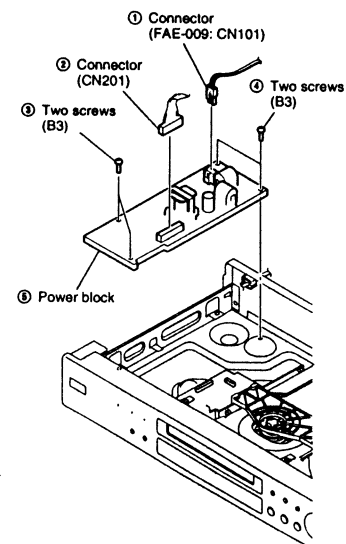
2-3. FRONT PANEL BLOCK ASS'Y REMOVAL



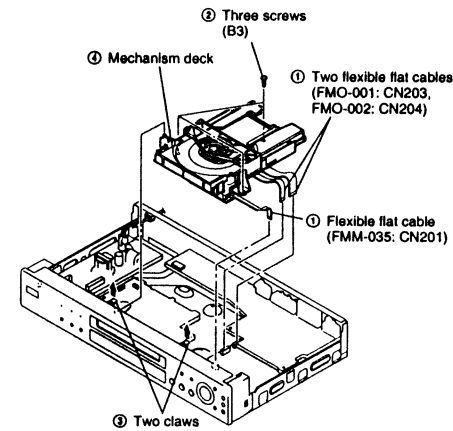
2-2. TRAY COVER ASS'Y REMOVAL



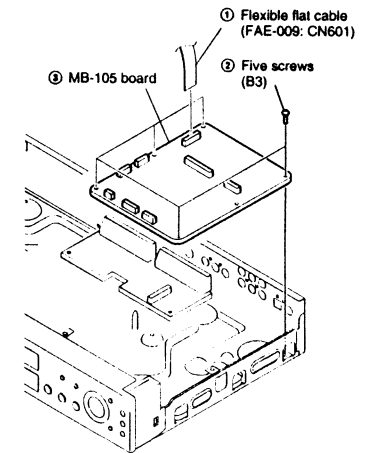
2-4. POWER BLOCK REMOVAL



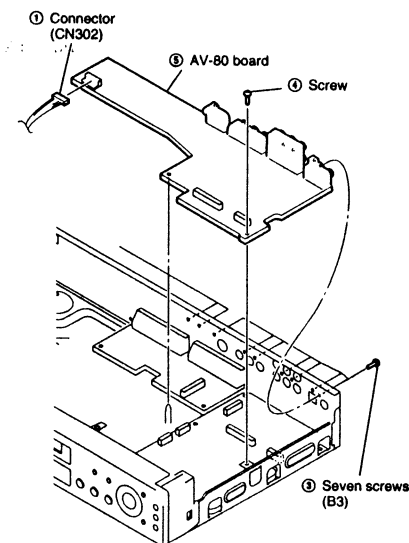
2-5. MECHANISM DECK REMOVAL



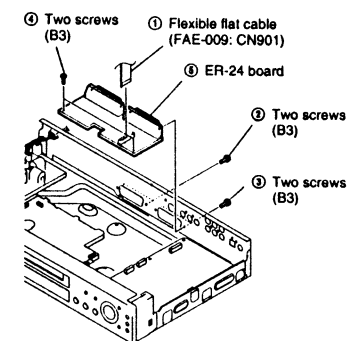
2-7. MB-105 BOARD REMOVAL



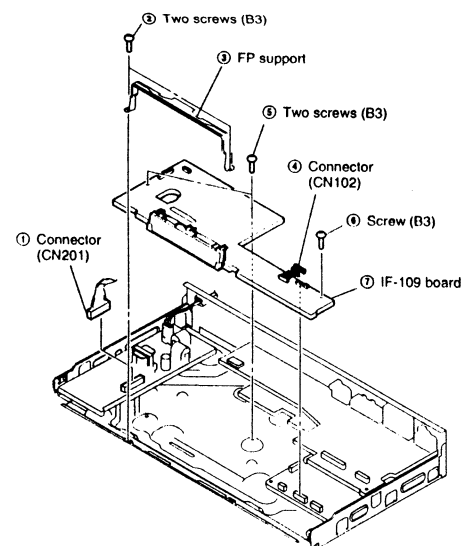
2-6. AV-80 BOARD REMOVAL



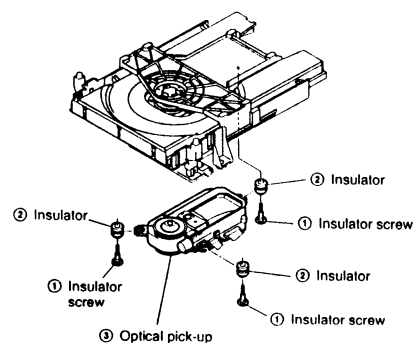
2-8. ER-24 BOARD REMOVAL



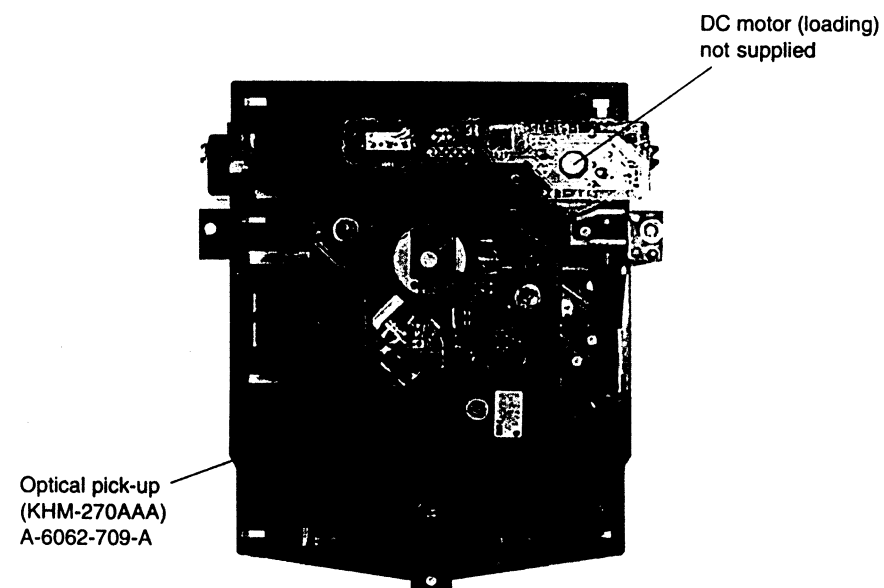
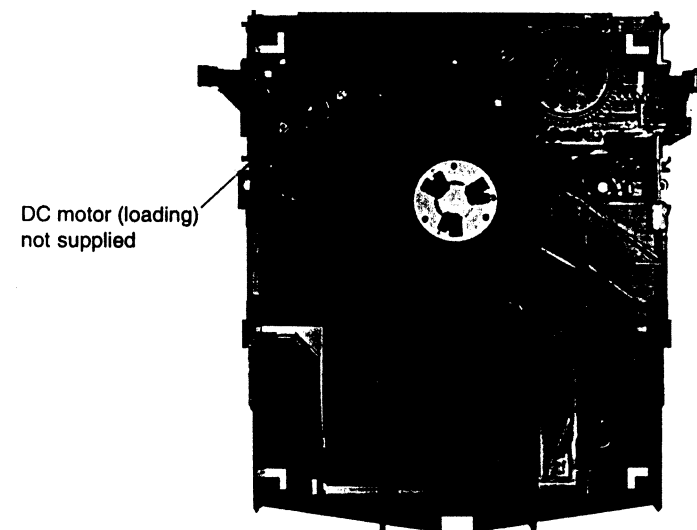
2-9. IF-109 BOARD REMOVAL



2-10. OPTICAL PICK-UP REMOVAL

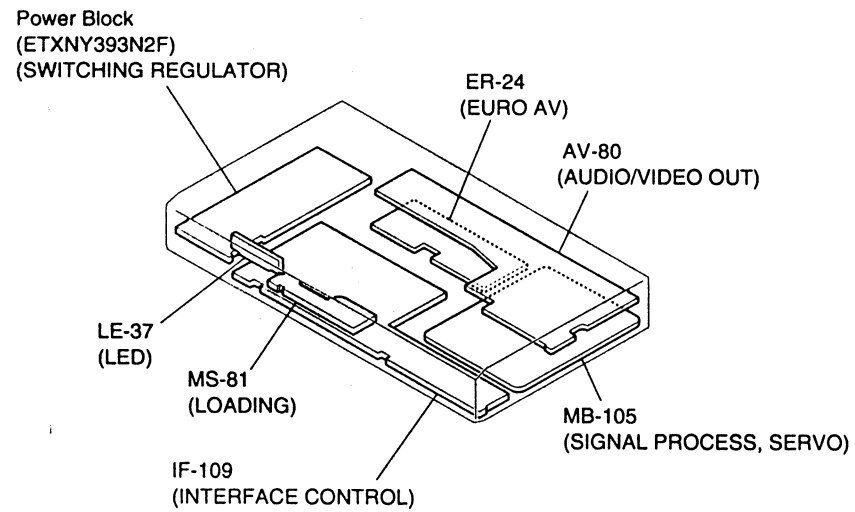


2-11. INTERNAL VIEWS



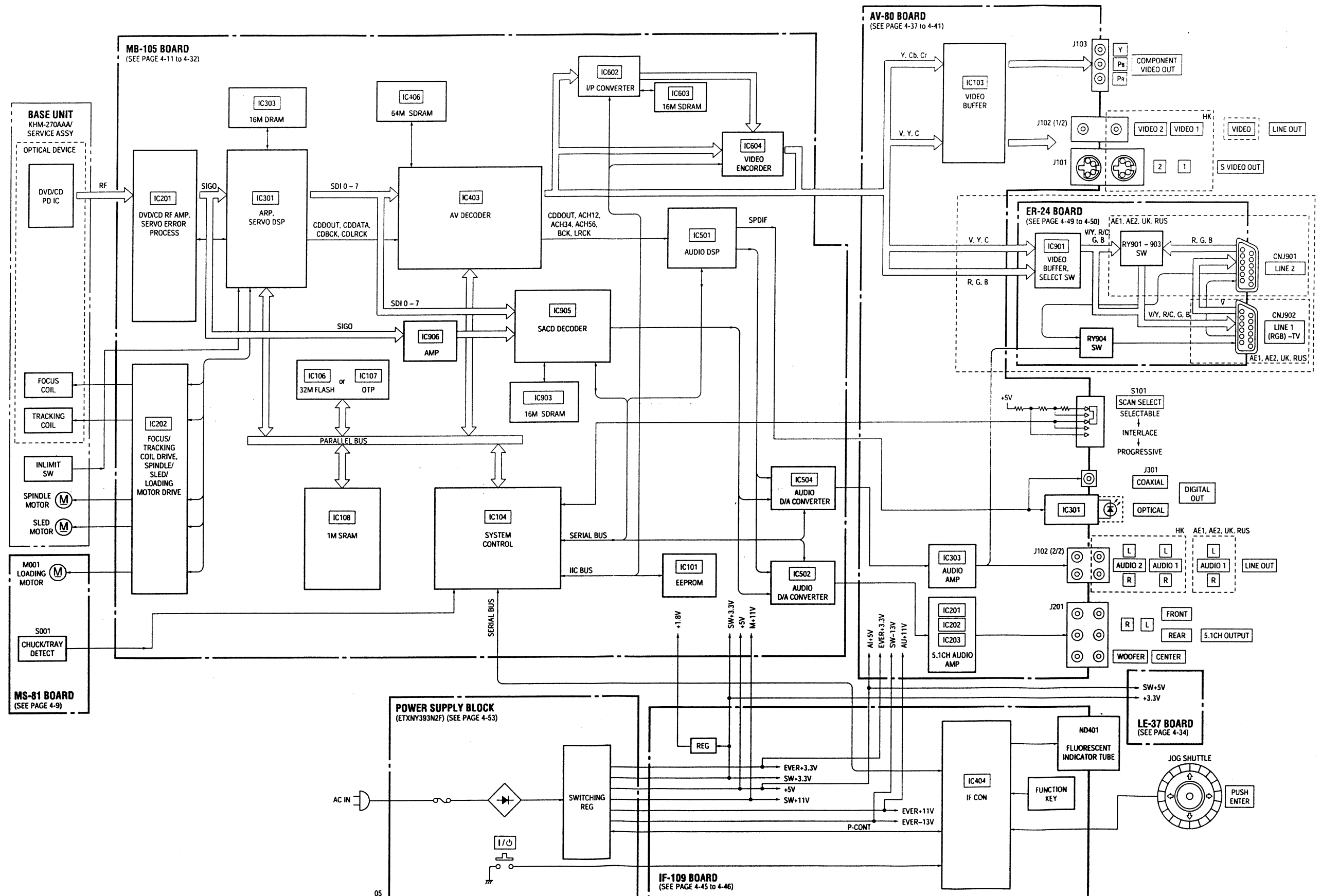
MEMO

2-12. CIRCUIT BOARDS LOCATION

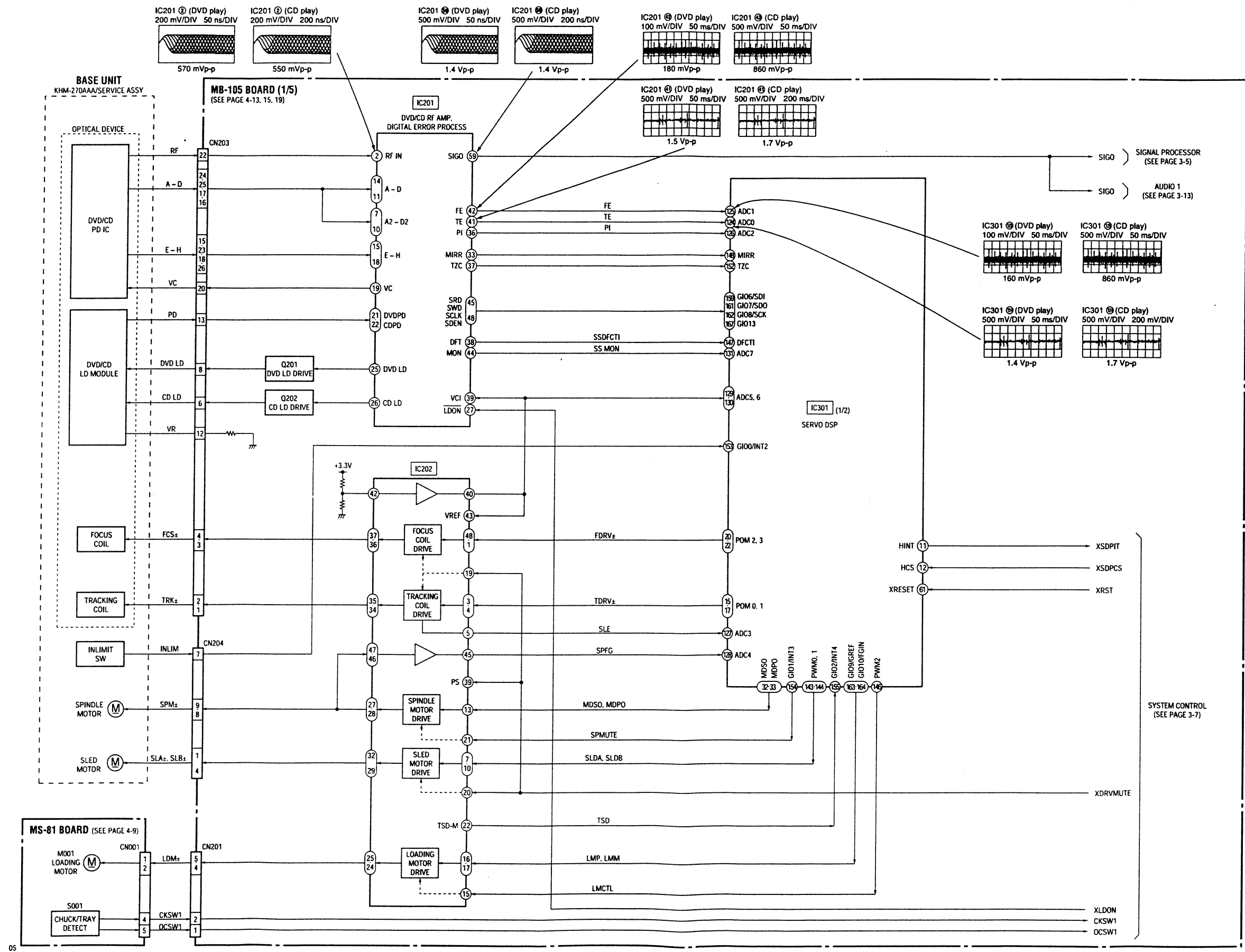


SECTION 3 BLOCK DIAGRAMS

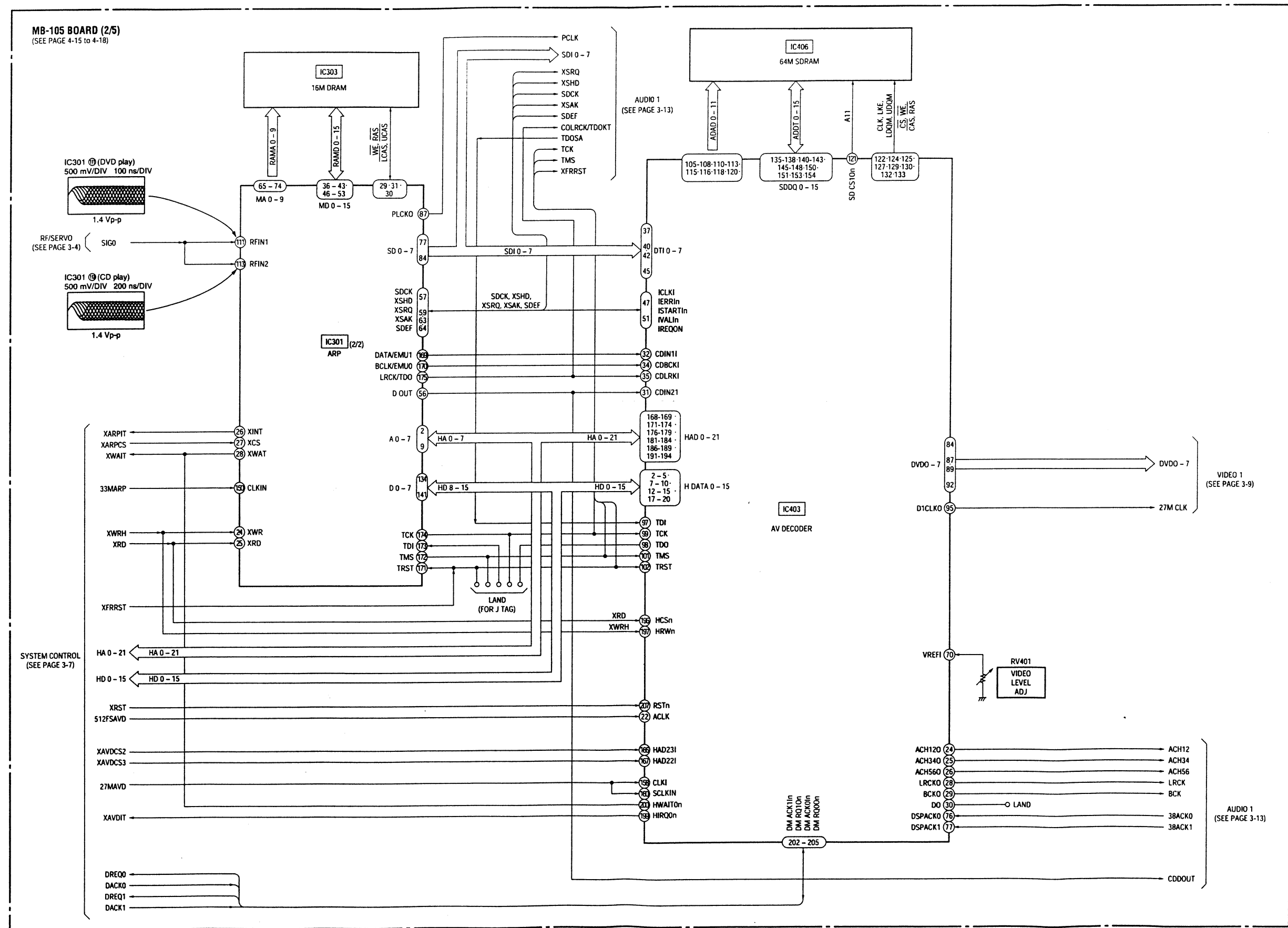
3-1. OVERALL BLOCK DIAGRAM



3-2. RF/SERVO BLOCK DIAGRAM

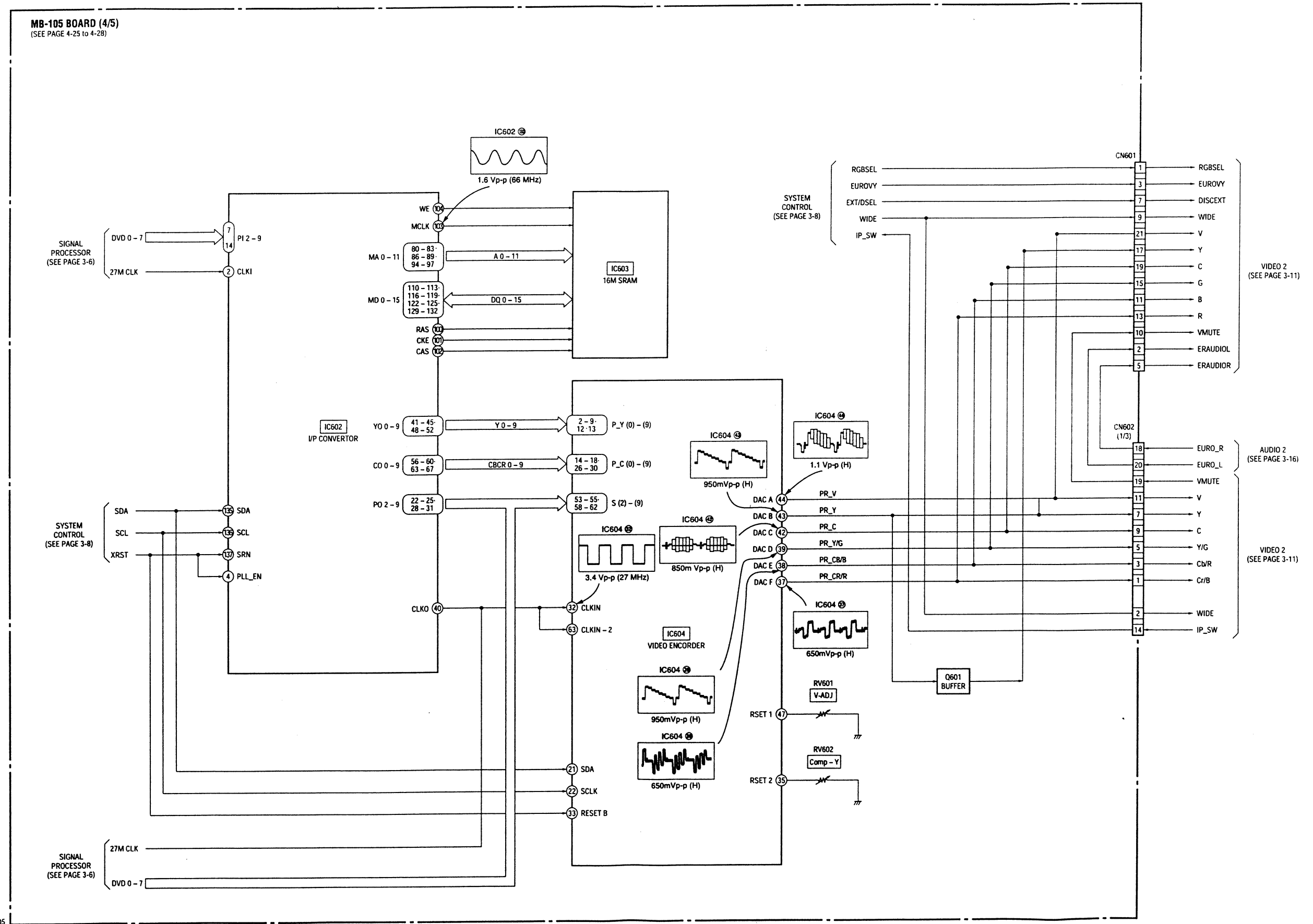


3-3. SIGNAL PROCESSOR BLOCK DIAGRAM

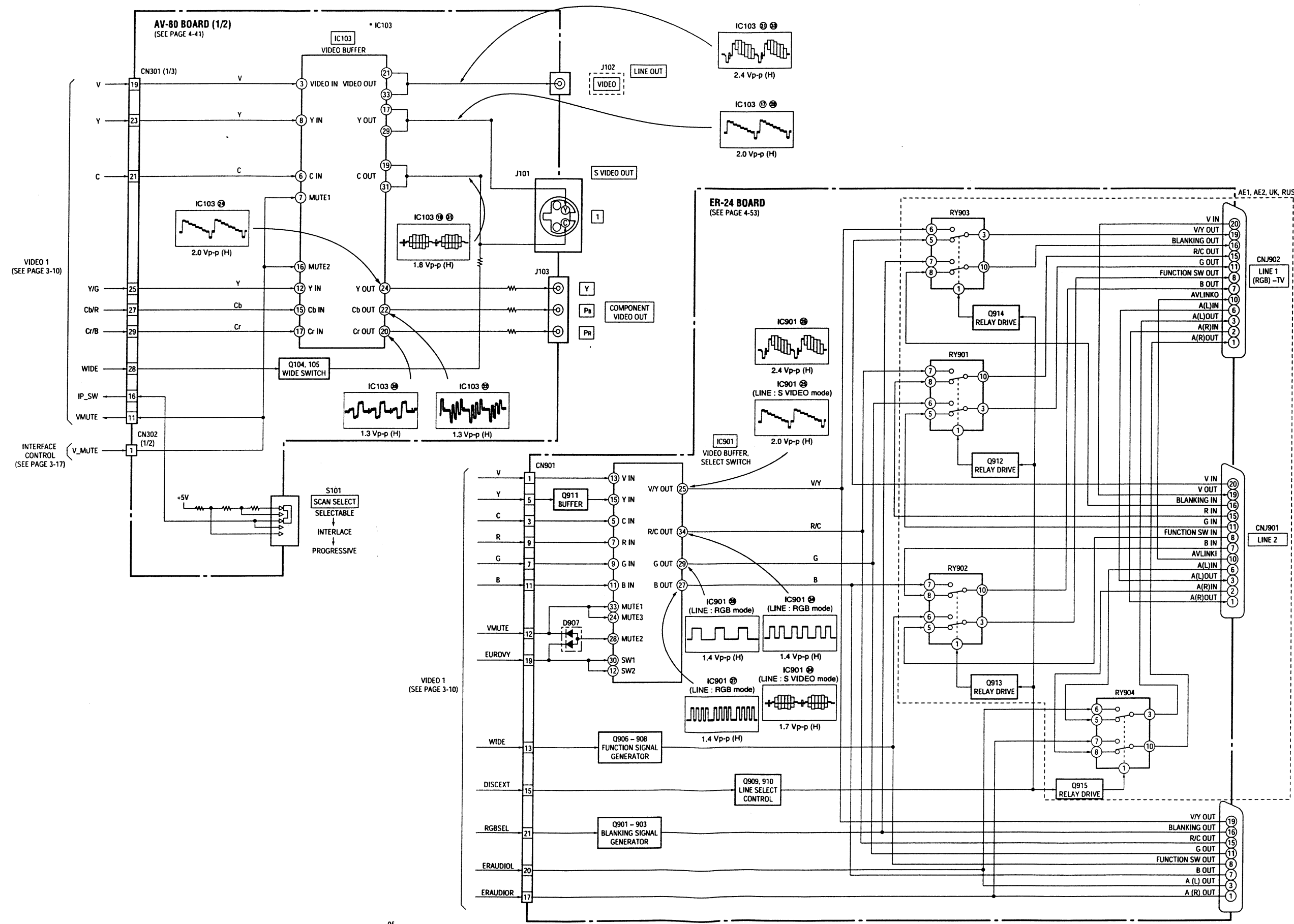




3-5. VIDEO (1) BLOCK DIAGRAM



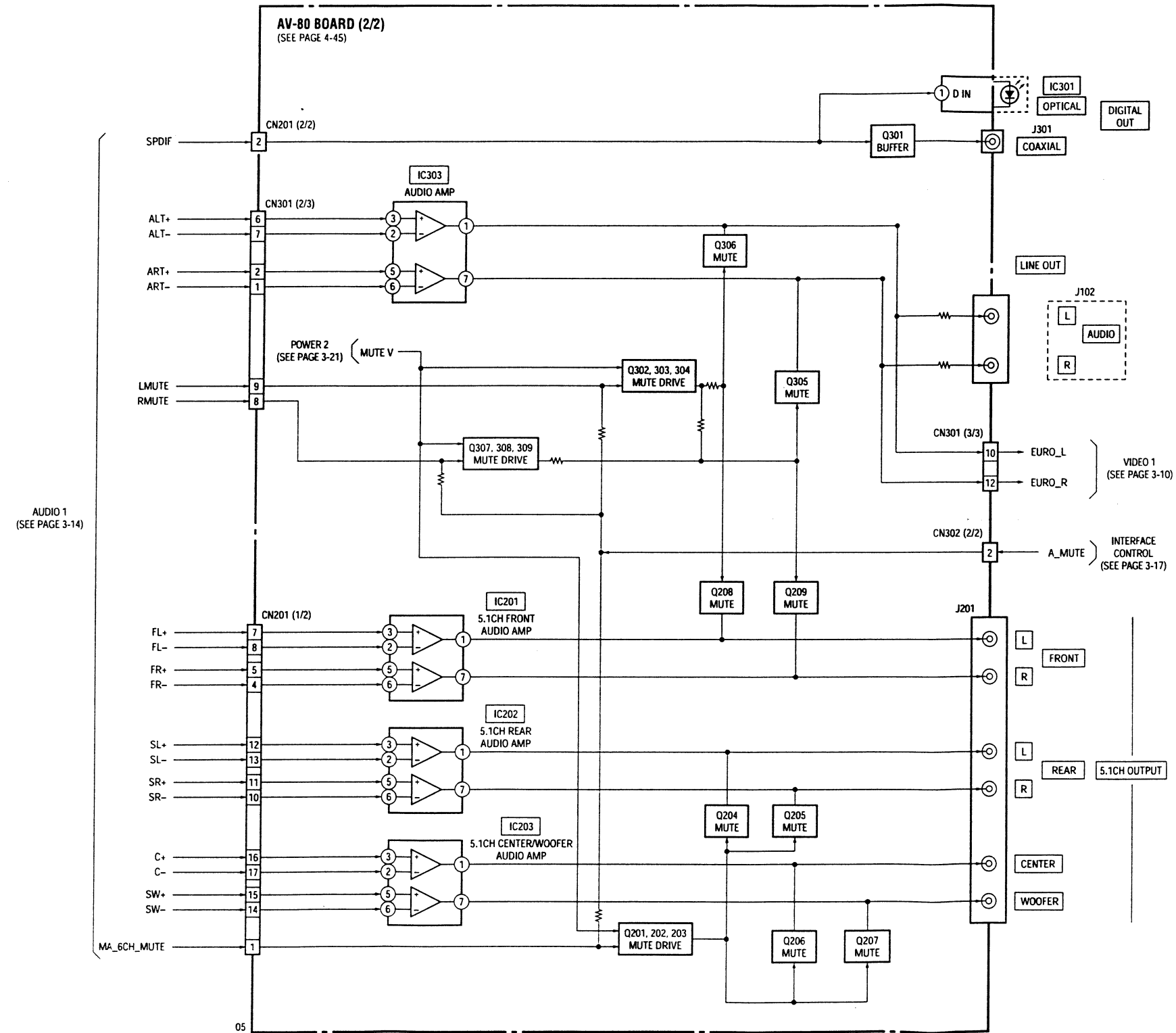
3-6. VIDEO (2) BLOCK DIAGRAM



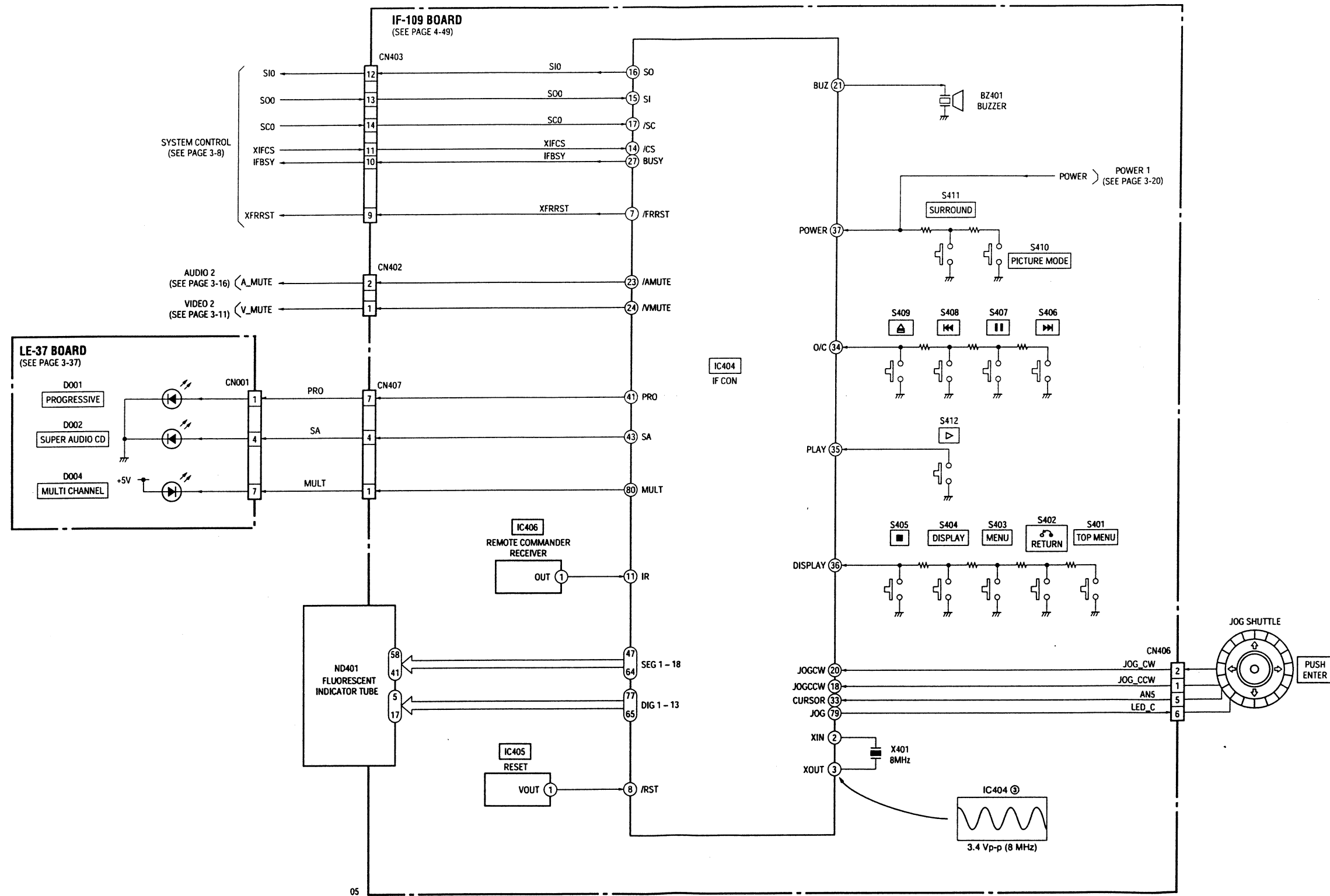
05



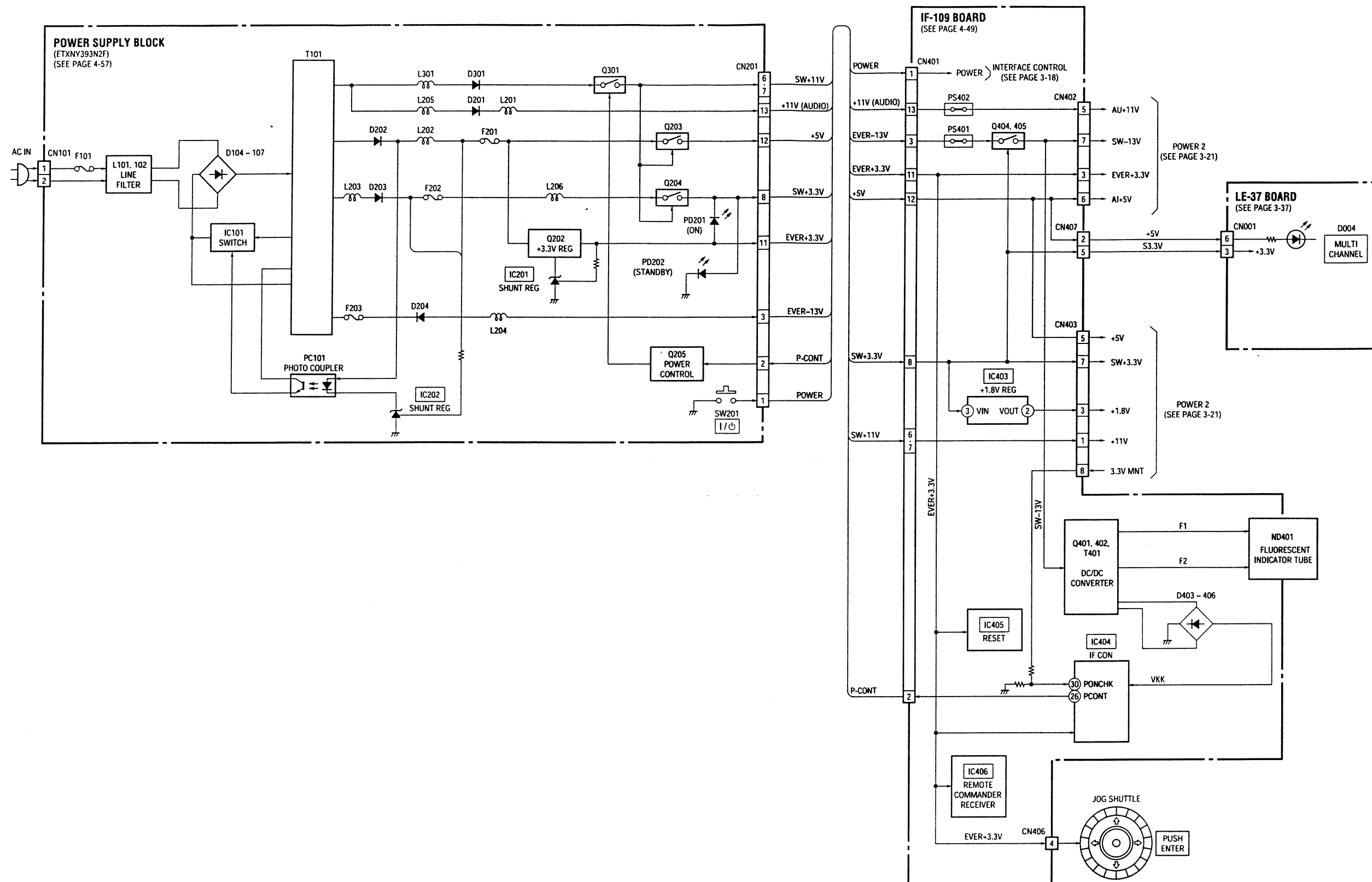
3-8. AUDIO (2) BLOCK DIAGRAM



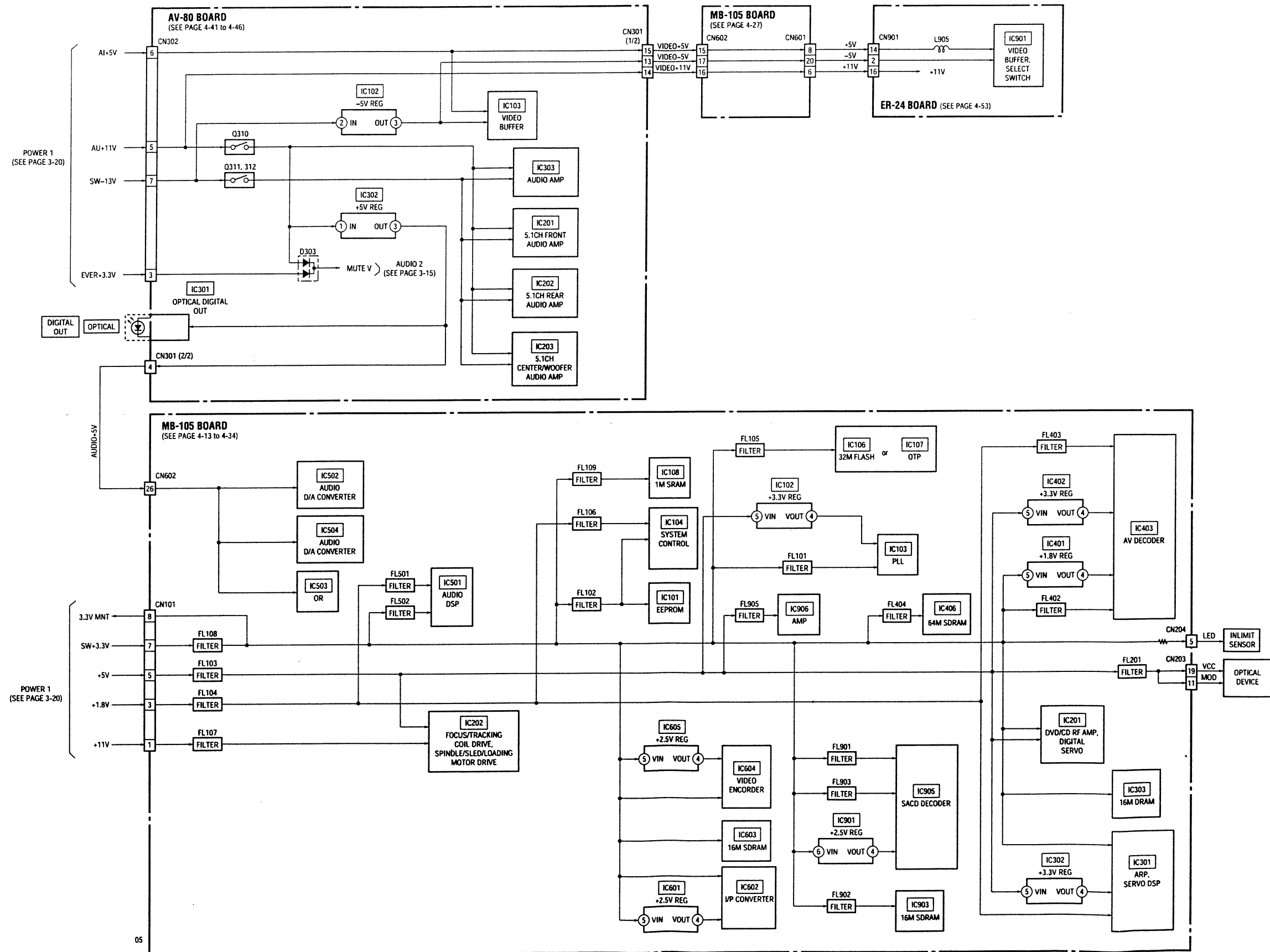
3-9. INTERFACE CONTROL BLOCK DIAGRAM



3-10. POWER (1) BLOCK DIAGRAM



3-11. POWER (2) BLOCK DIAGRAM



SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS








THIS NOTE IS COMMON FOR PRINTED WIRING
BOARDS AND SCHEMATIC DIAGRAMS.




For printed wiring boards:

- — : indicates a lead wire mounted on the component side.
- — : indicates a lead wire mounted on the printed side.
- : Through hole.
- : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

Caution:
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.
(Side A)
Parts face side: Parts on the parts face side seen from the parts face are indicated.
(Side B)

For schematic diagram:

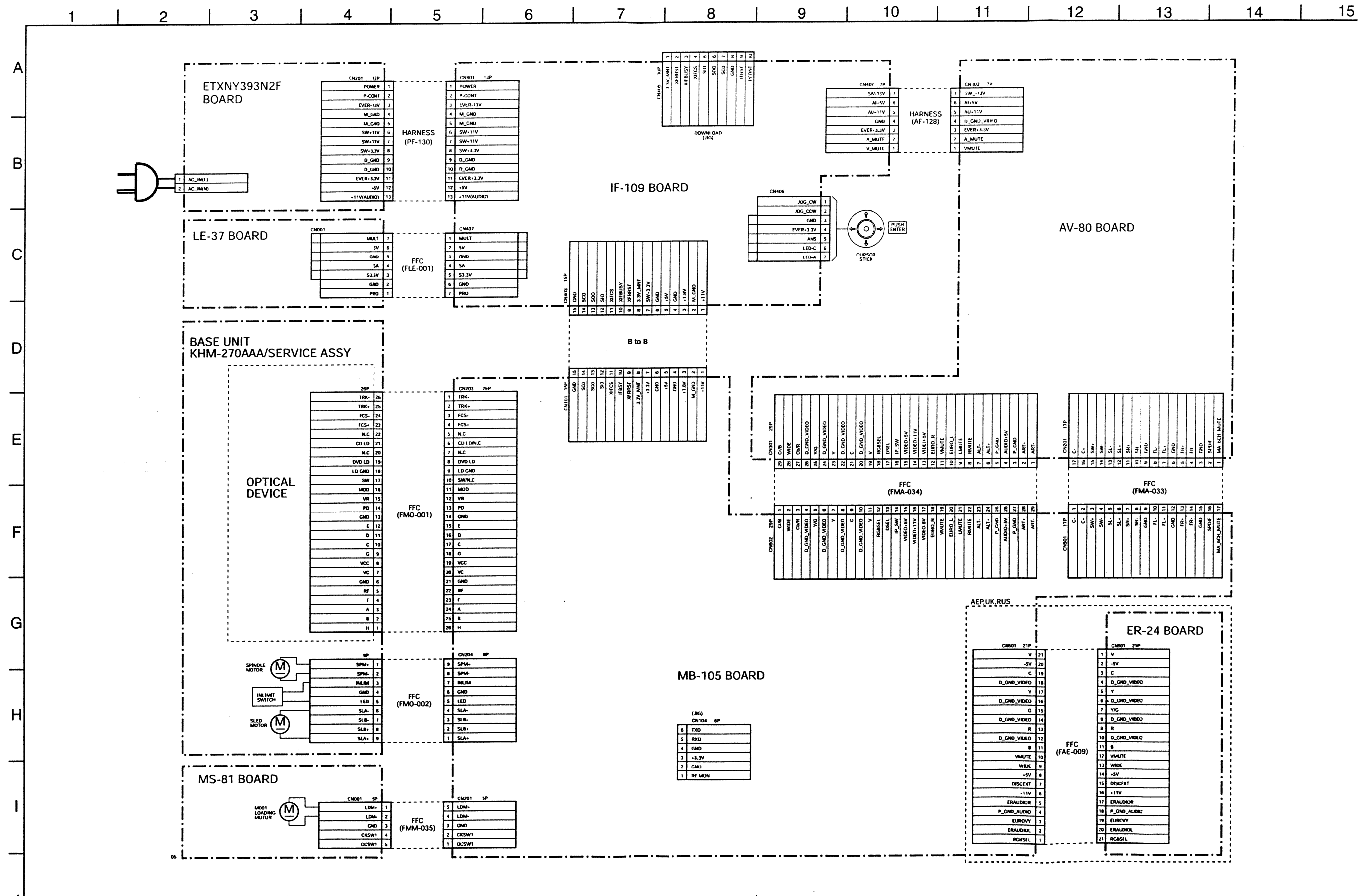
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4 W (Chip resistors : 1/10 W) unless otherwise specified.
kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : fusible resistor.
-  : panel designation.
-  : internal component.
-  : adjustment for repair.
-  : B+ Line.
-  : B- Line.
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signal on DVD reference disc and when playing CD reference disc.
- Readings are taken with a digital multimeter (DC 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

Note: The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.	Note: Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
---	---

When indicating parts by reference number, please include the board name.

- Abbreviation
AE : AEP model
RUS : Russia model
UK : UK model
HK : Hong Kong model

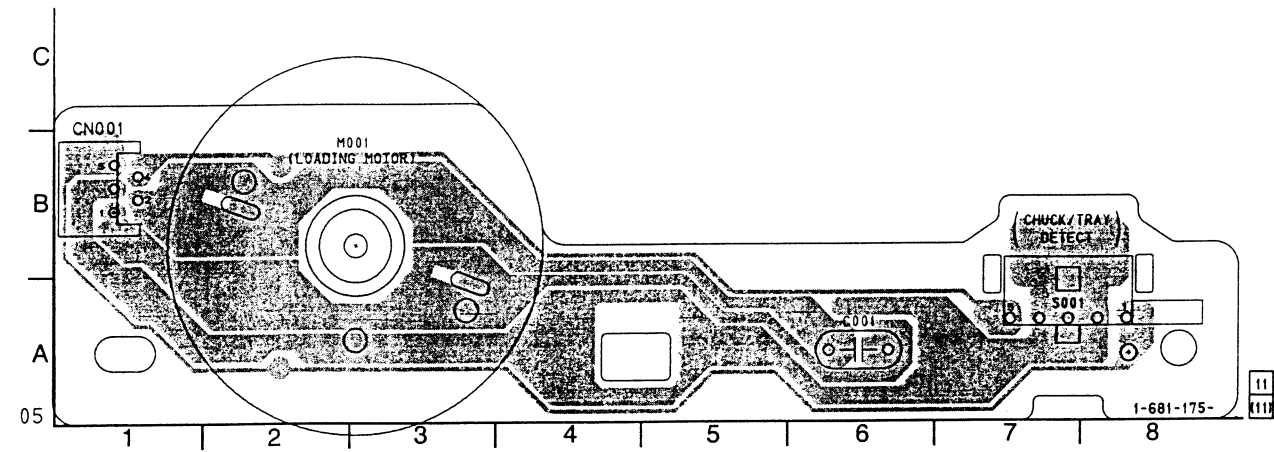
4-2. FRAME SCHEMATIC DIAGRAM




FRAME SCHEMATIC DIAGRAM

MS-81 (LOADING) PRINTED WIRING BOARD

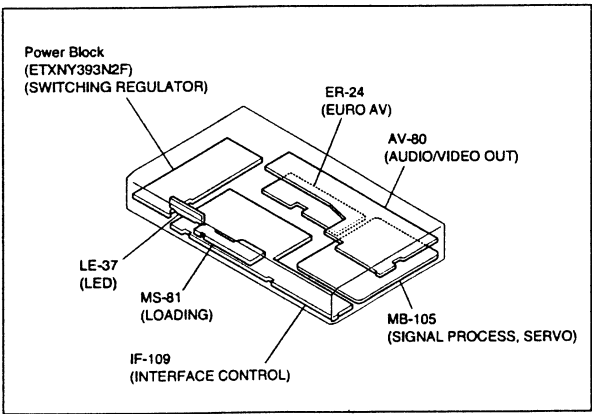
MS-81 BOARD



•  : Uses unleaded solder.

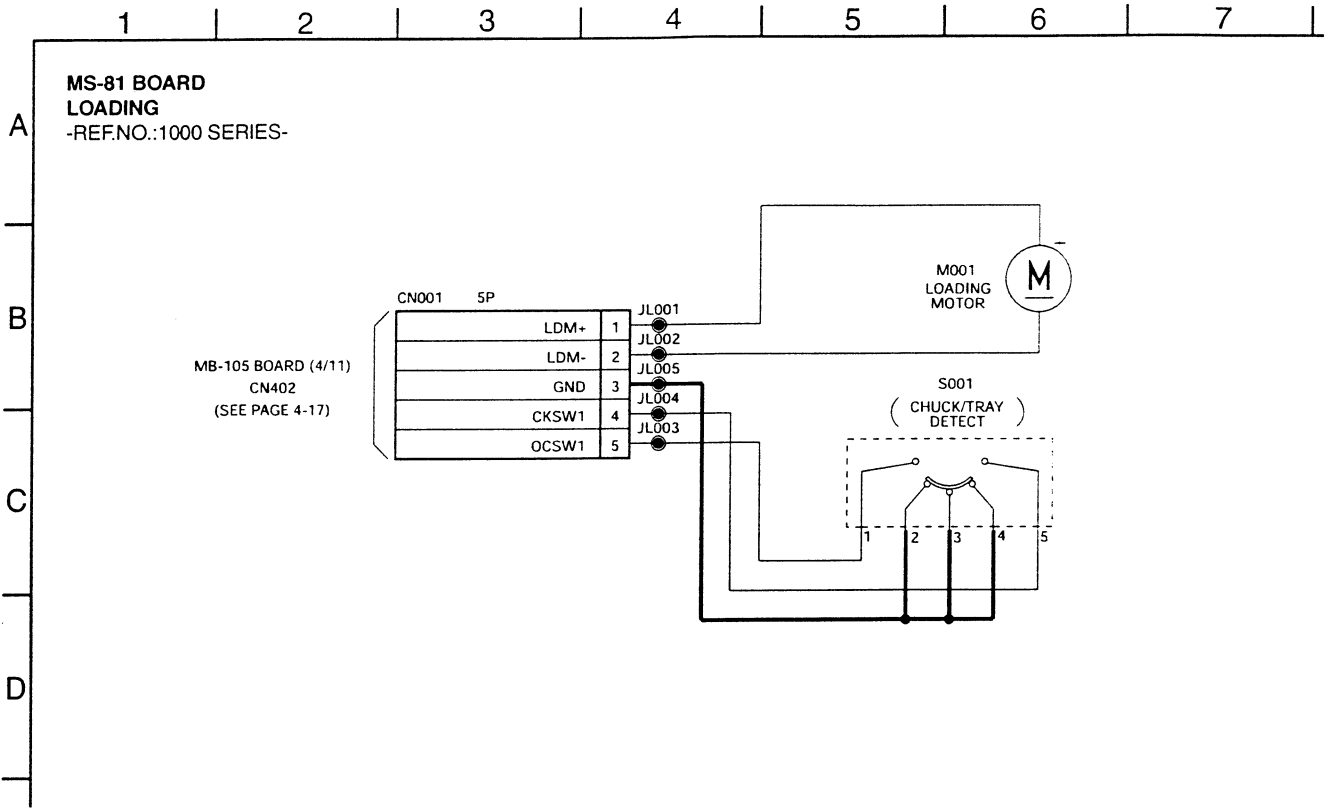
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



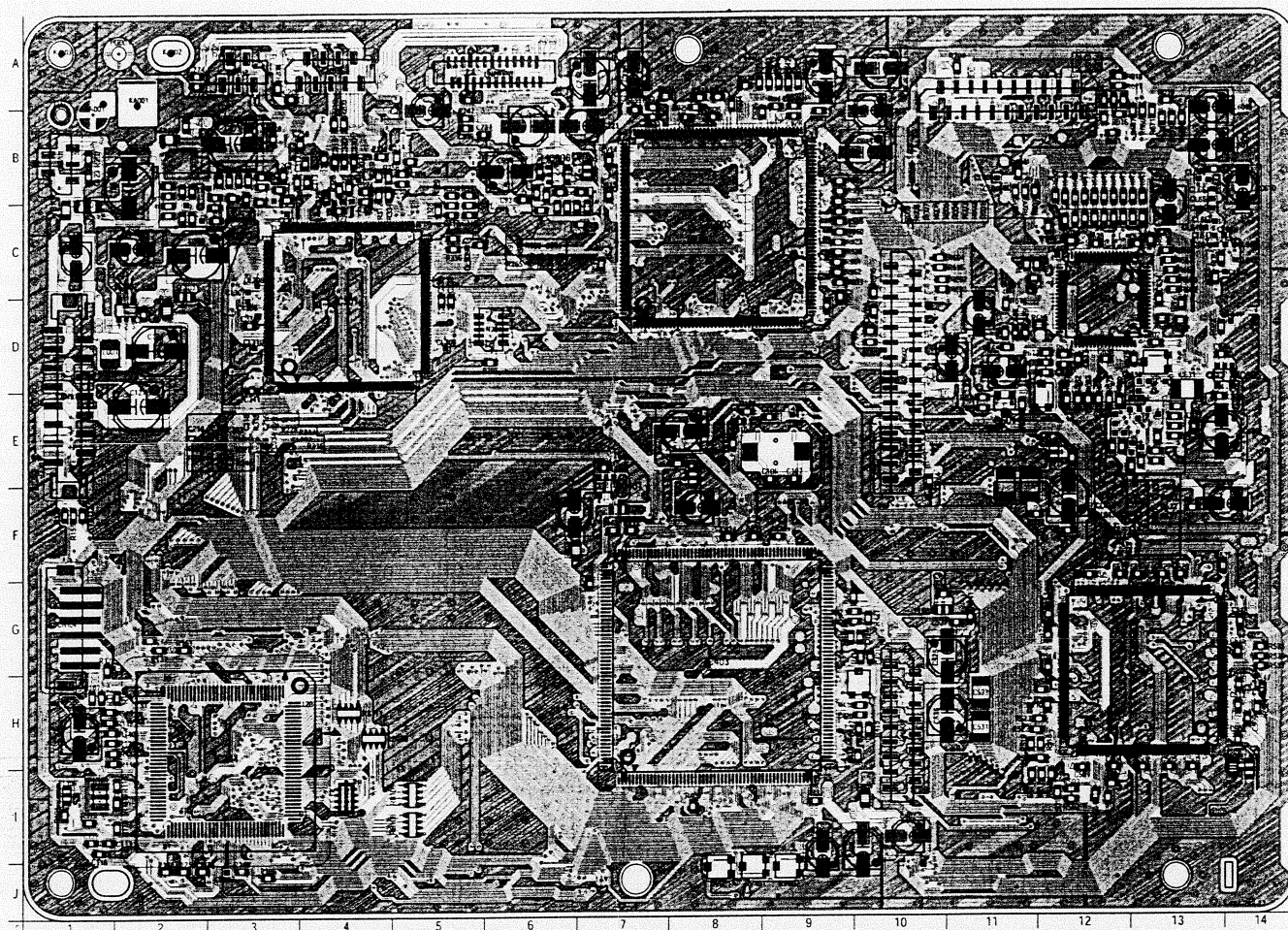
For Schematic Diagram

• Refer to page 4-7 for printed wiring board of MB-81 board.



MB-105 (SIGNAL PROCESS, SERVO) PRINTED WIRING BOARD

MB-105 BOARD (SIDE A)



MB-105 BOARD

A SIDE

CN101	E-1	D501	E-10
CN104	G-1	D502	E-10
CN203	A-5	D503	F-10

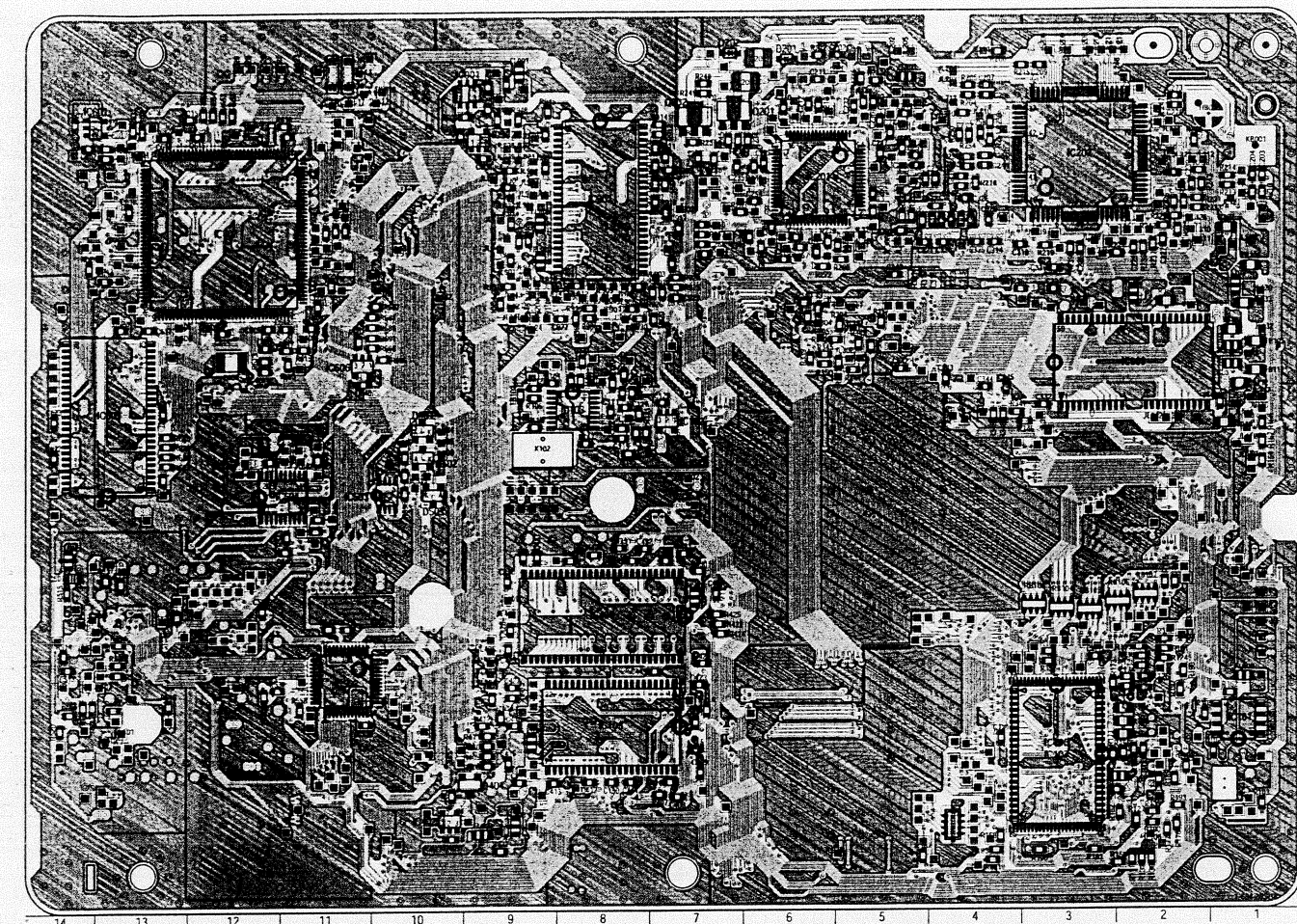
IC104	H-3	IC101	H-1
IC301	D-4	IC102	E-8
IC302	D-2	IC103	E-9
IC401	E-7	IC106	I-3
IC403	G-8	IC108	H-8
IC501	H-13	IC201	B-6
IC604	D-12	IC202	B-3
IC605	E-14	IC303	D-2
IC905	C-8	IC402	I-10
IC906	B-6	IC406	G-8

		IC502	H-11
Q601	E-11	IC503	F-11

Q201	B-7
Q202	B-7
Q401	I-10

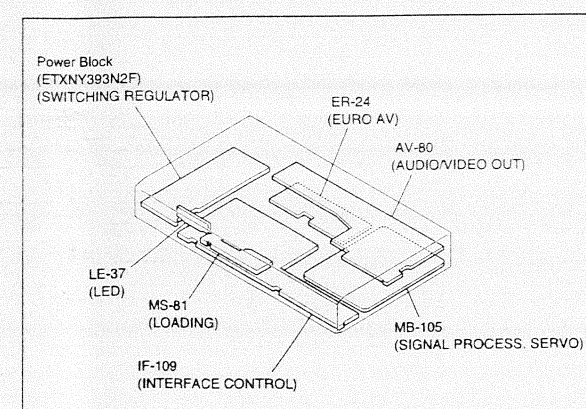
- **LF** : Uses unleaded solder.

MB-105 BOARD (SIDE B)



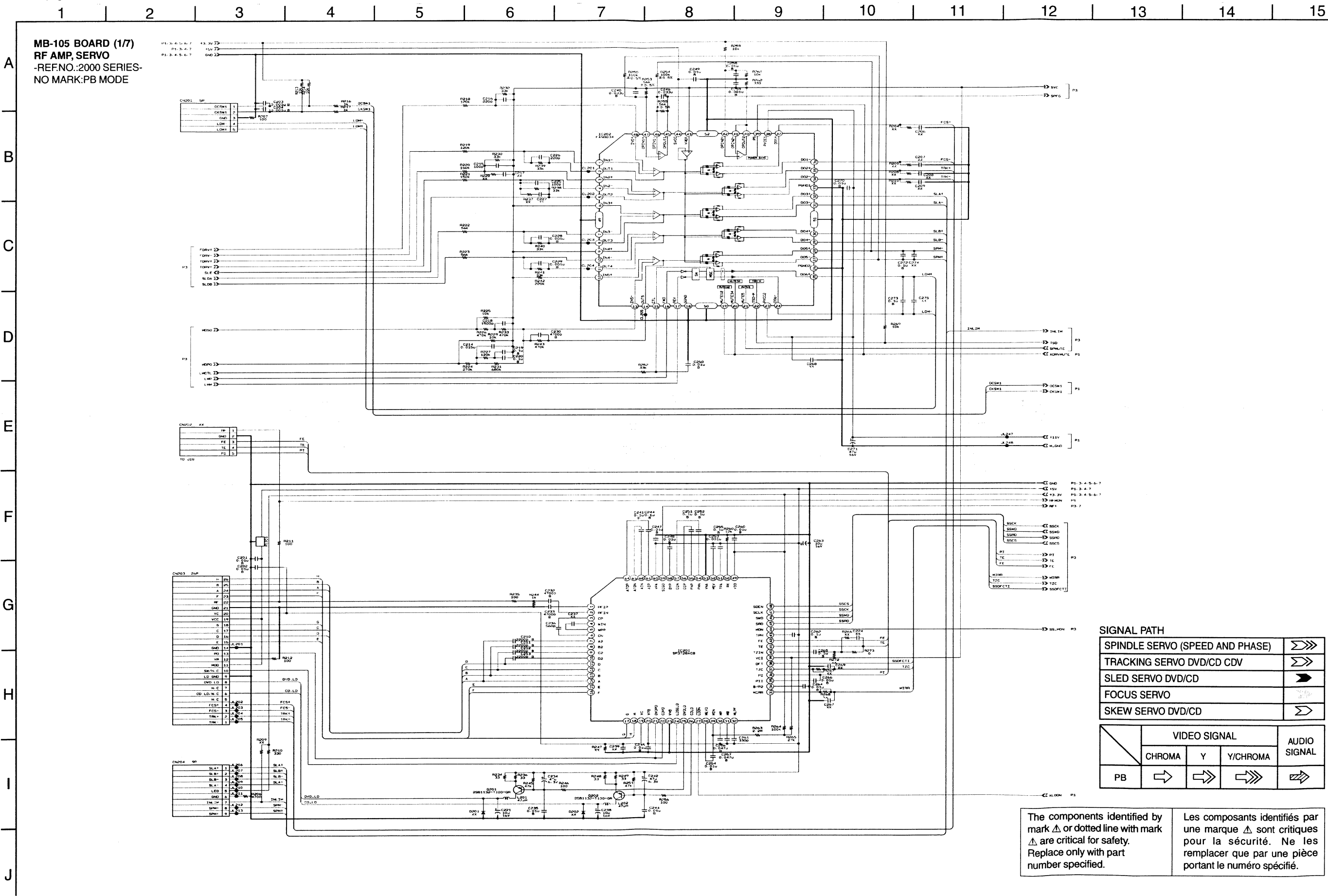
For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



For Schematic Diagram

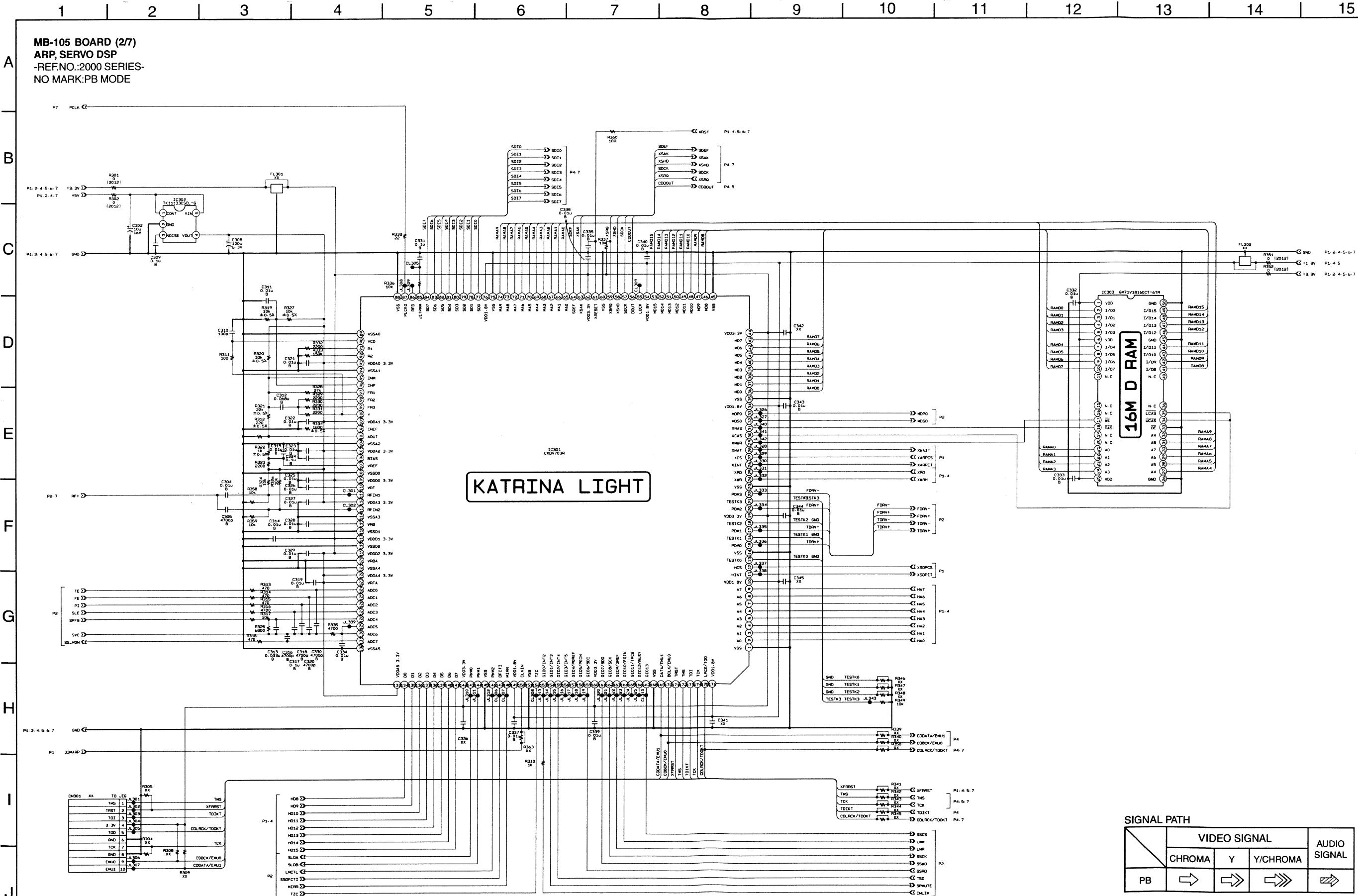
- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List



DVP-NS930V

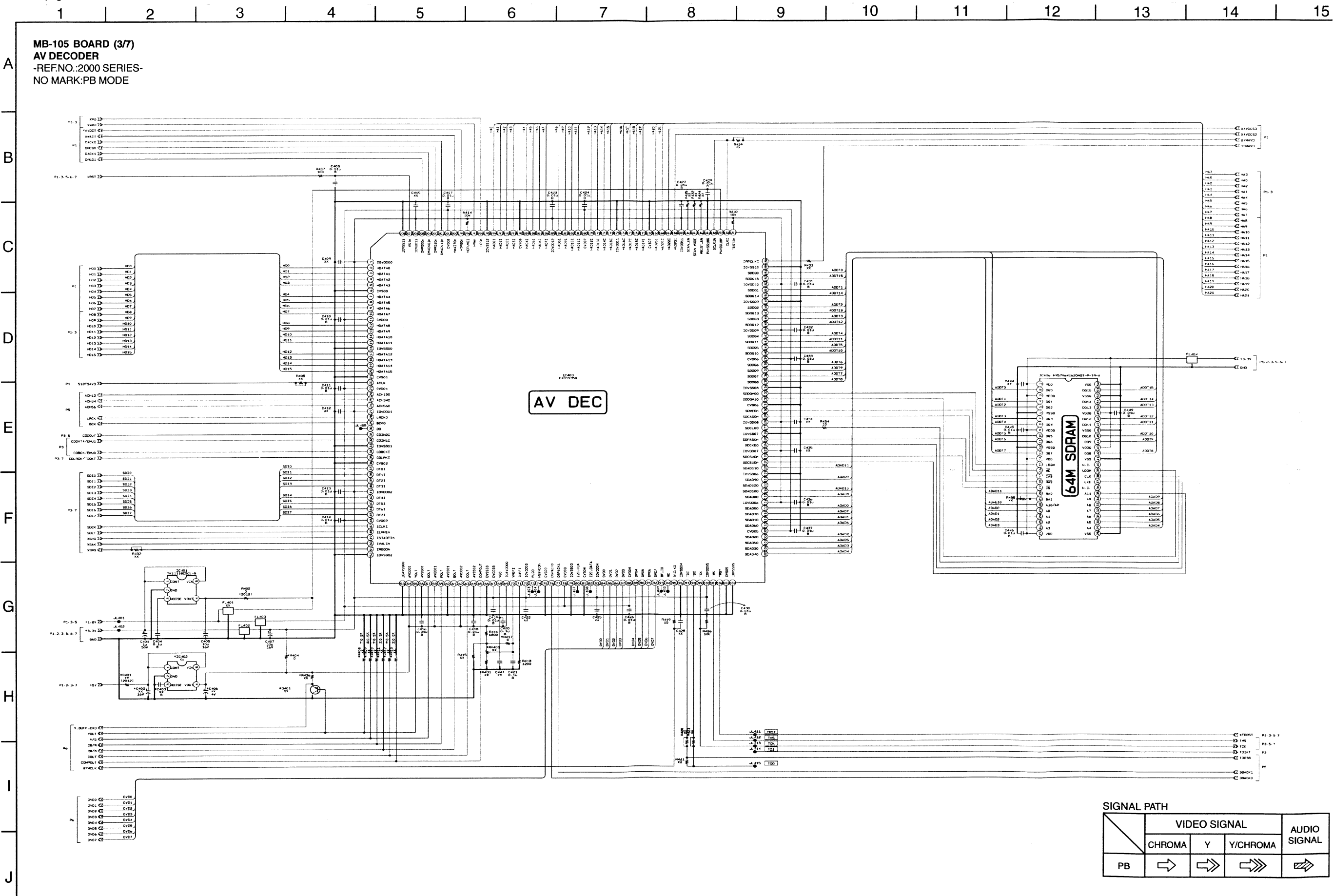
For Schematic Diagram

- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List



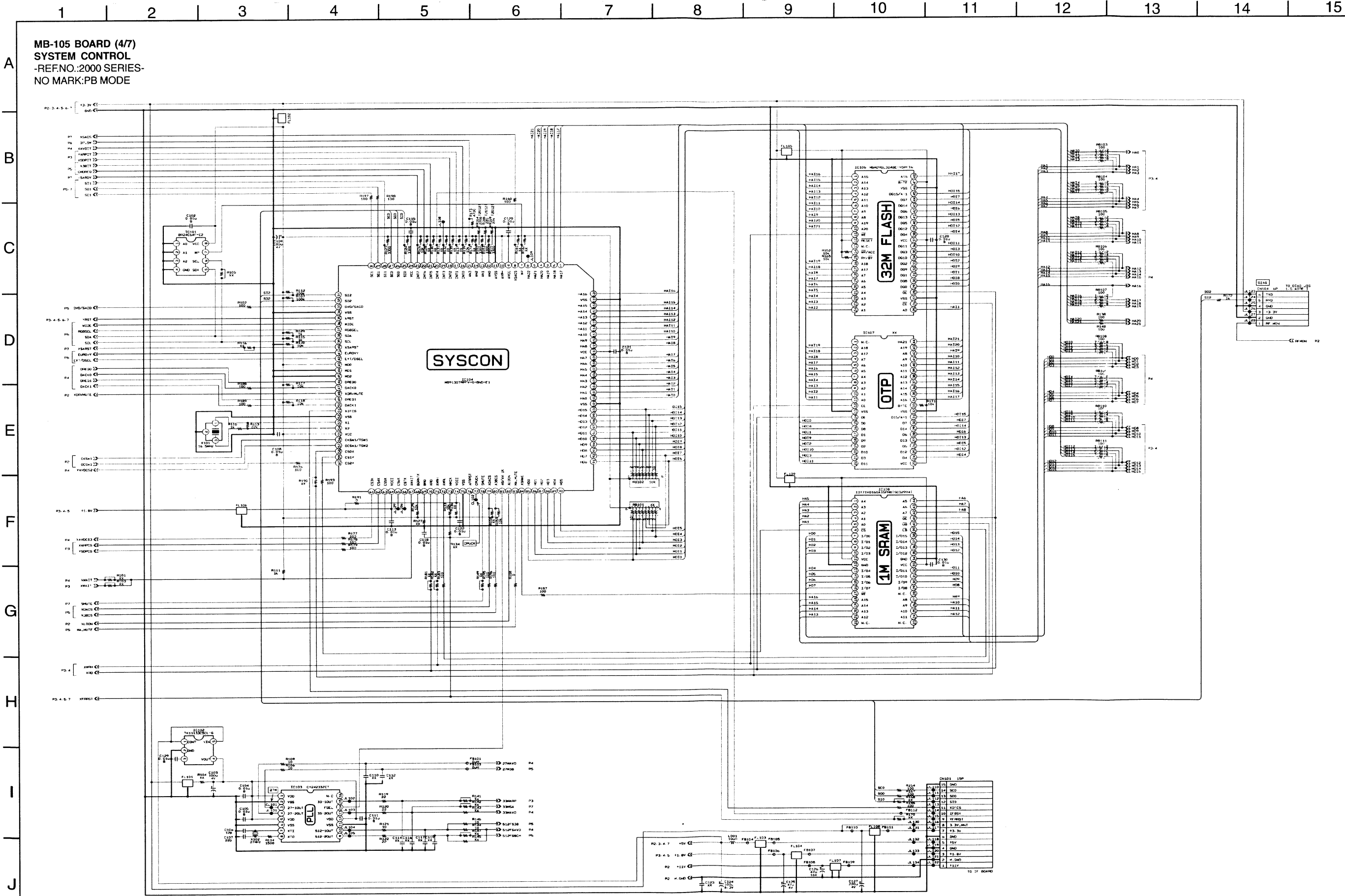
For Schematic Diagram

- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List



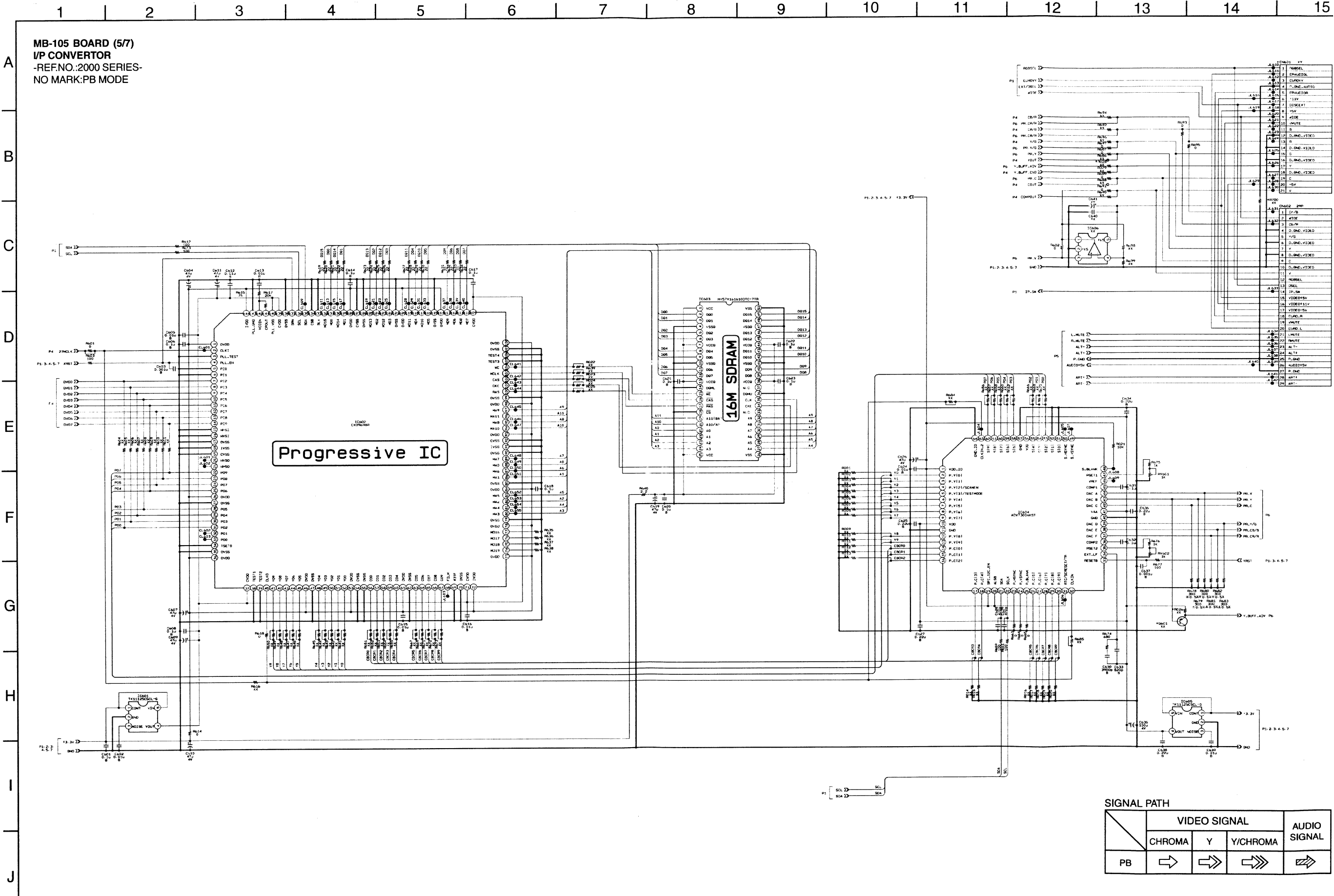
For Schematic Diagram

- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List



For Schematic Diagram

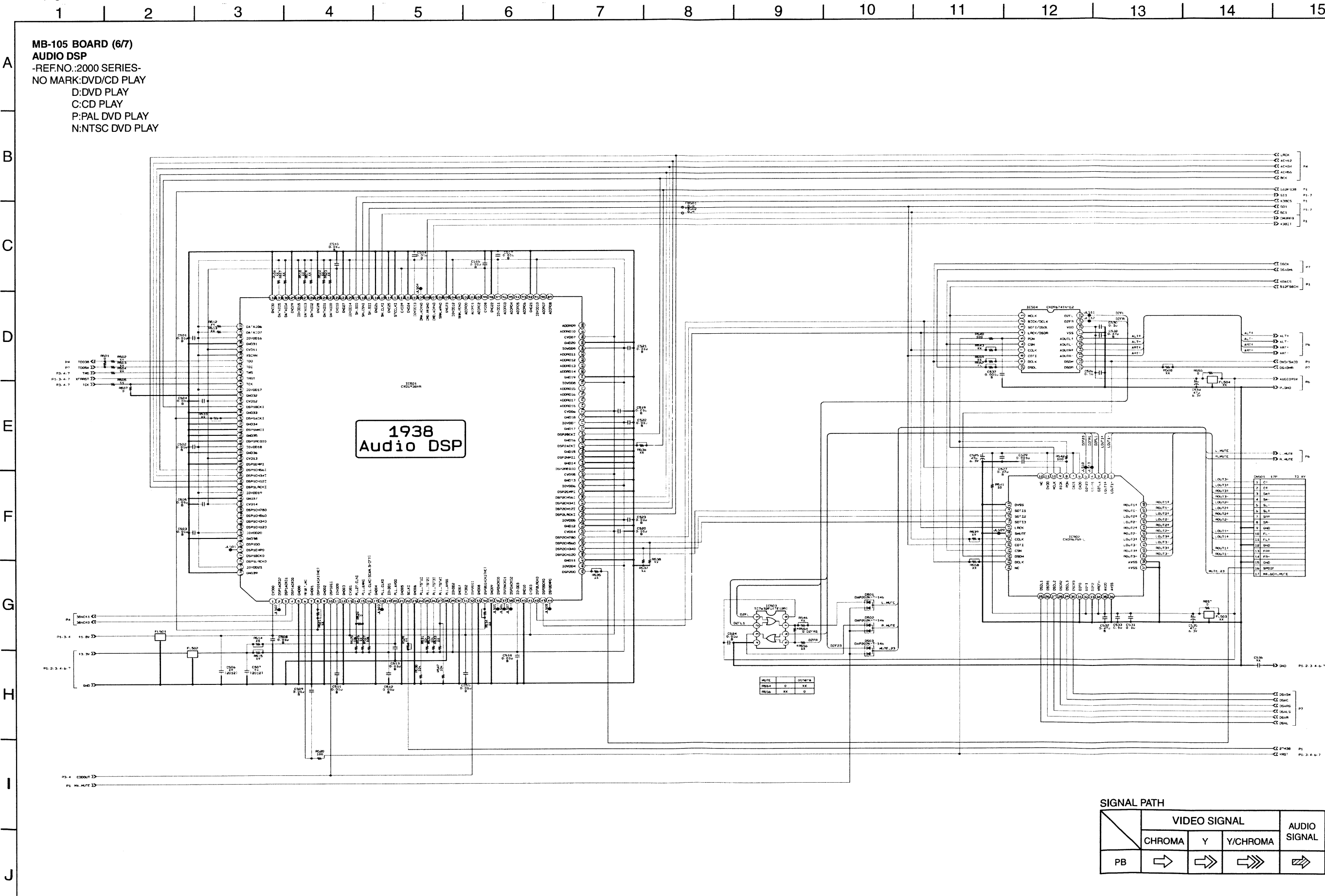
- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List



DVP-NS930V

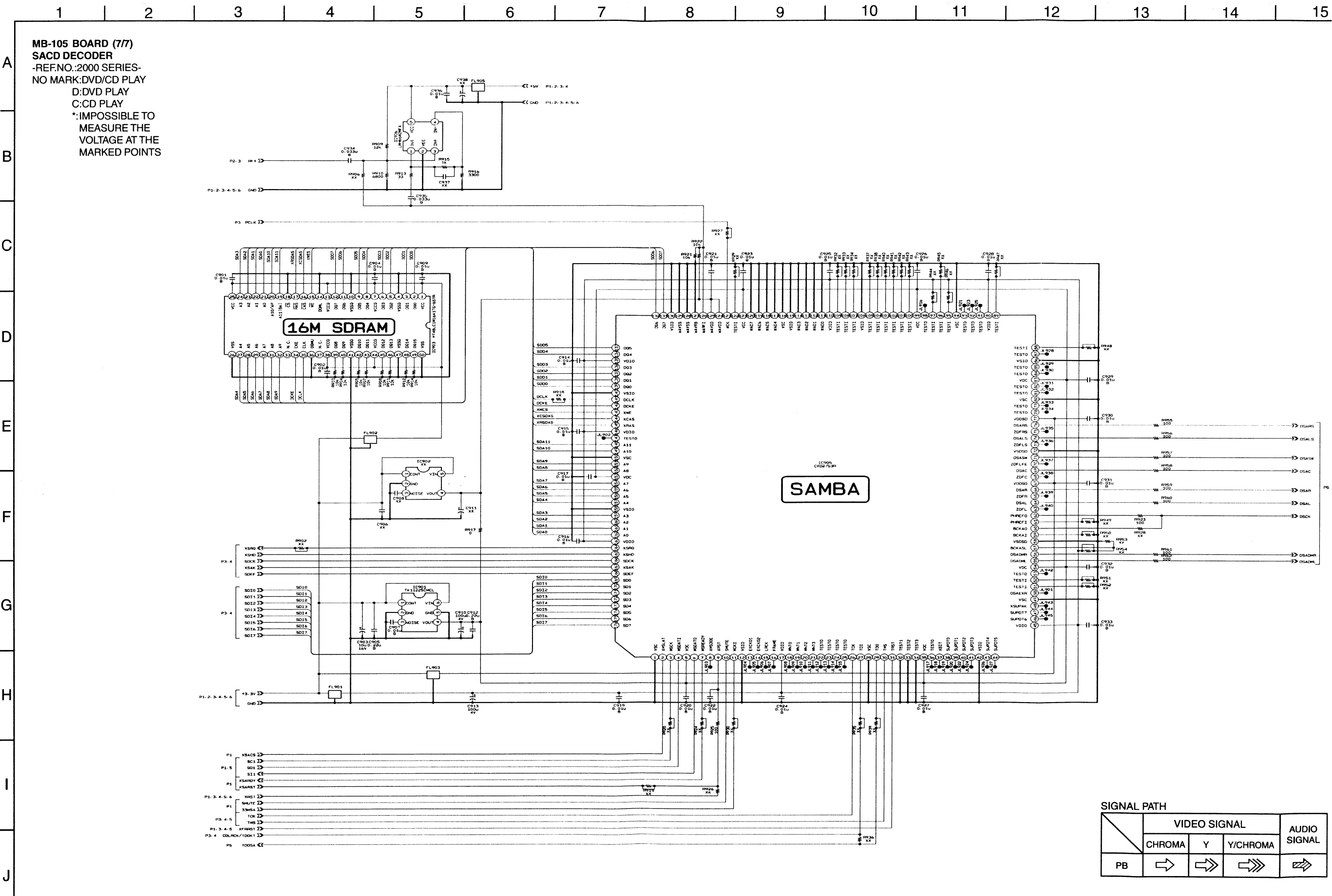
For Schematic Diagram

- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List



For Schematic Diagram

- Refer to page 4-9 for printed wiring board of MB-105 board.
- Refer to page 4-3 for waveform
- Refer to page 4-25 differential Part List

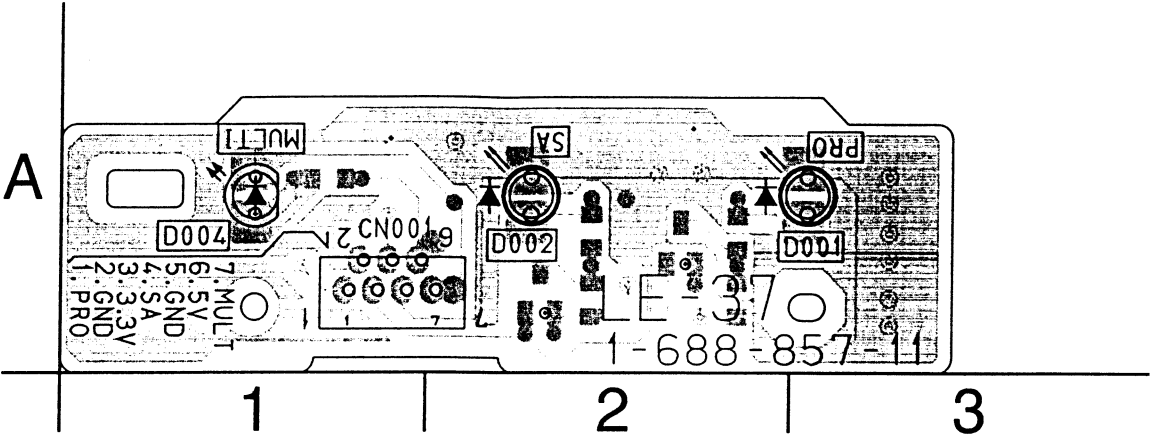



MB-105 BOARD differential Part List (1/7-7/7)

	HK	RUS	AEP/UK
C303	XX	XX	MSM51V18160F-60T47M1
CN601	XX	FFC/FPC 21P	FFC/FPC 21P
Q601	XX	2SA1162-YG-TE85L	2SA1162-YG-TE85L
R026	XX	1K	1K
R028	XX	0	0
R164	2.2K	4.7K	12K
R169	22K	6.8K	47K
R554	0	XX	XX
R556	XX	0	0
R700	XX	0	0

LE-37 (LED) PRINTED WIRING BOARD

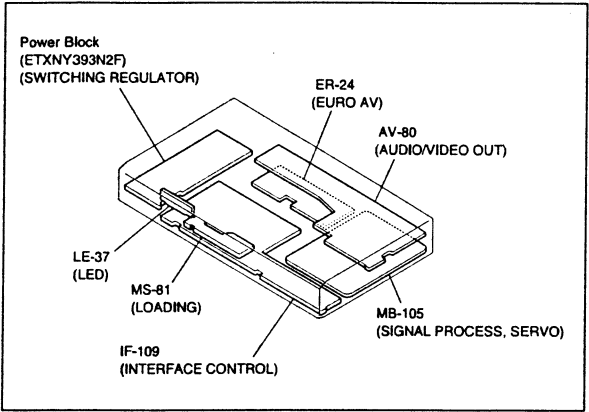
LE-37 BOARD (SIDE A)



-  : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

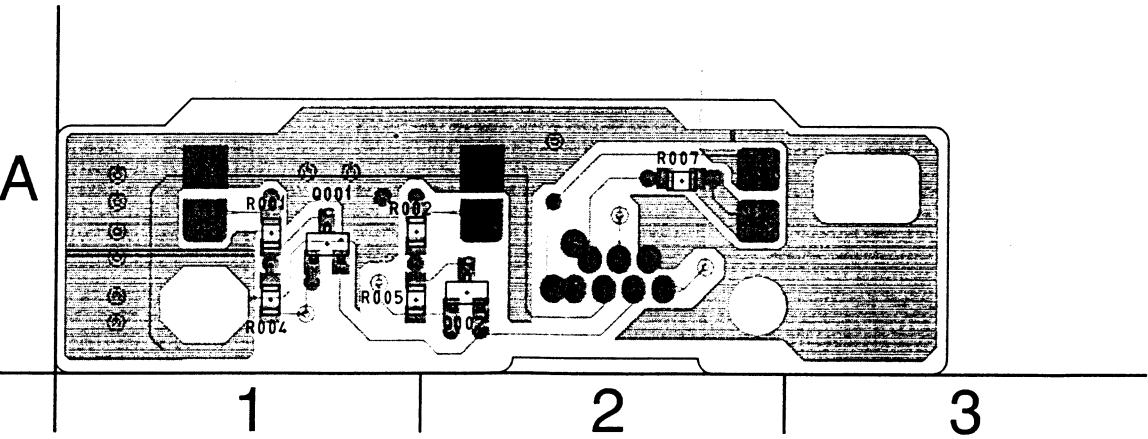


LE-37 BOARD

A SIDE B SIDE

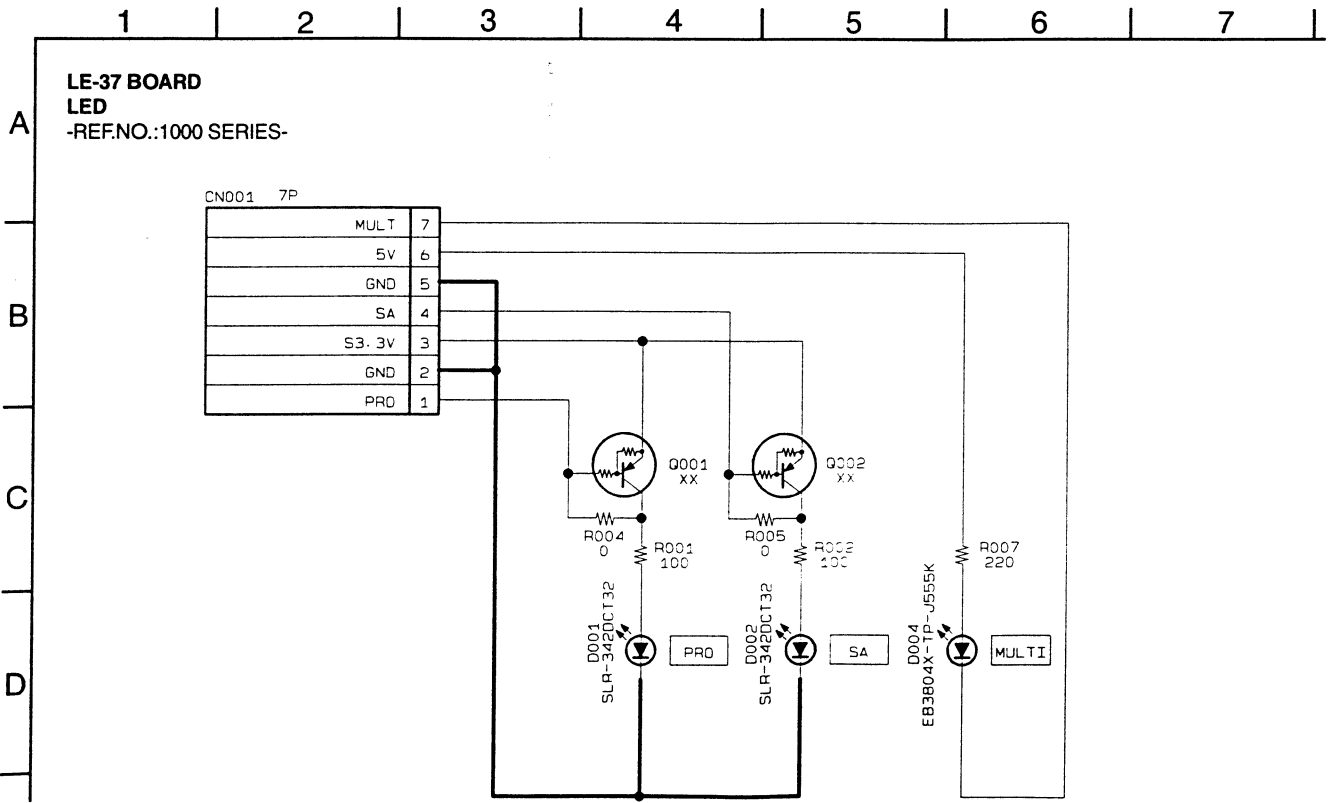
D001	A-3	Q001	A-1
D002	A-2	Q002	A-2
D004	A-1		

LE-37 BOARD (SIDE B)



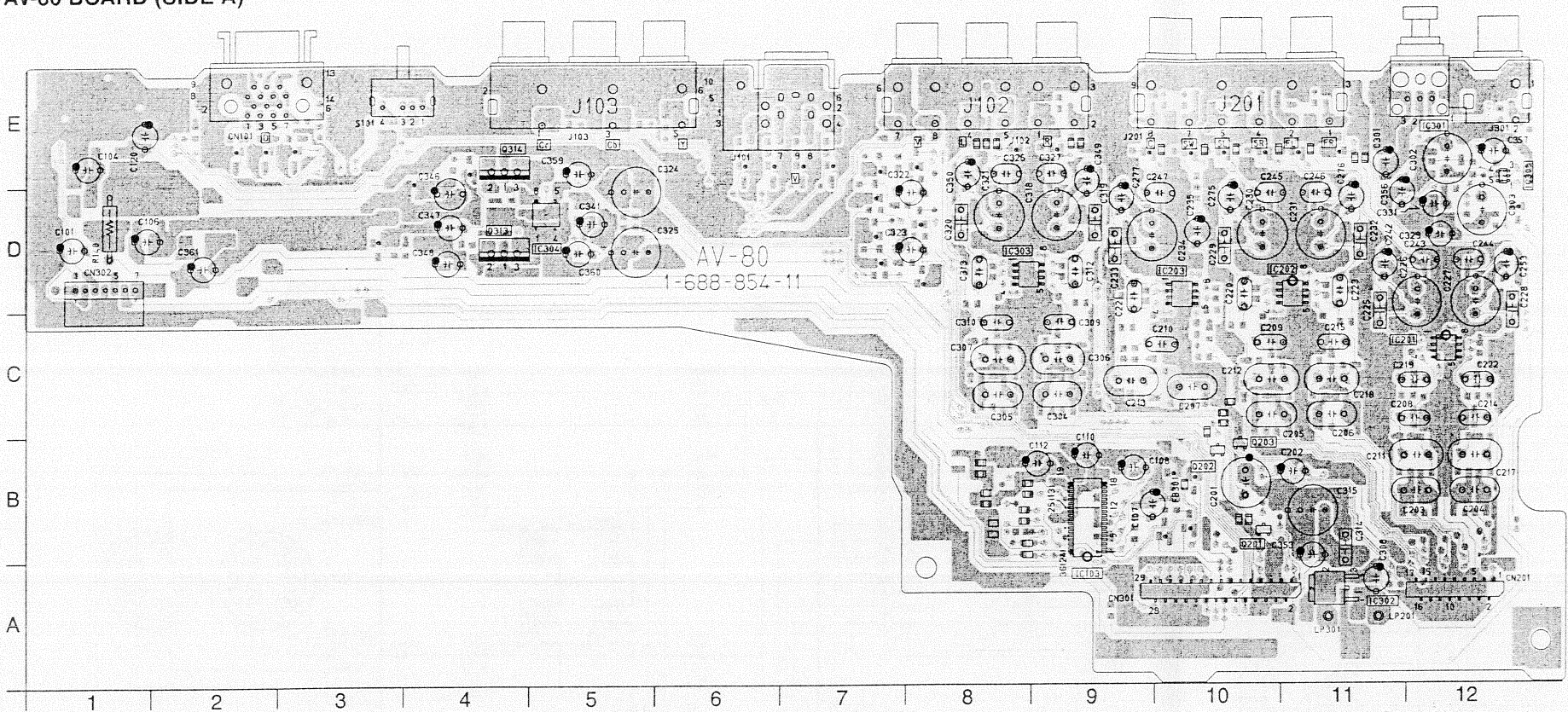
For Schematic Diagram

- Refer to page 4-35 for printed wiring board of LE-37 board.

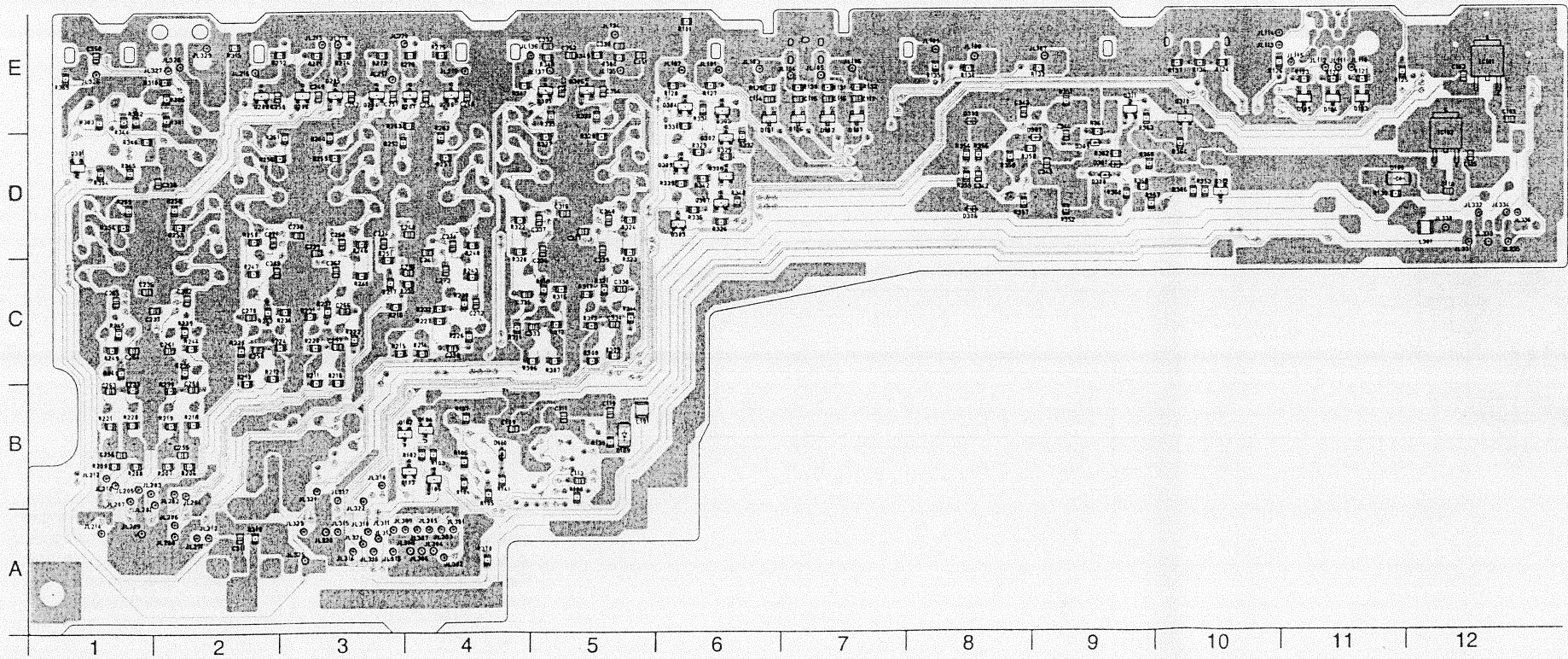


AV-80 (AUDIO/VIDEO OUT) PRINTED WIRING BOARD


AV-80 BOARD (SIDE A)



AV-80 BOARD (SIDE B)

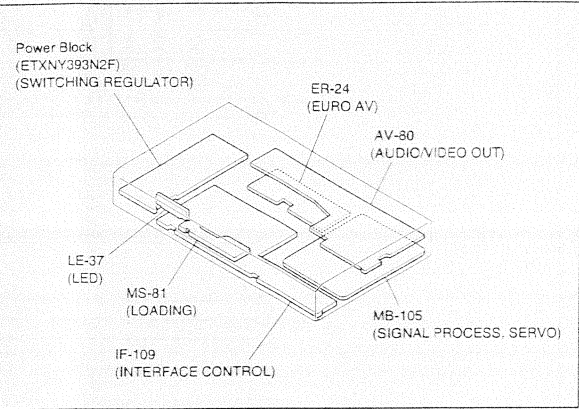


AUDIO/VIDEO OUT
AV-80

•  : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.

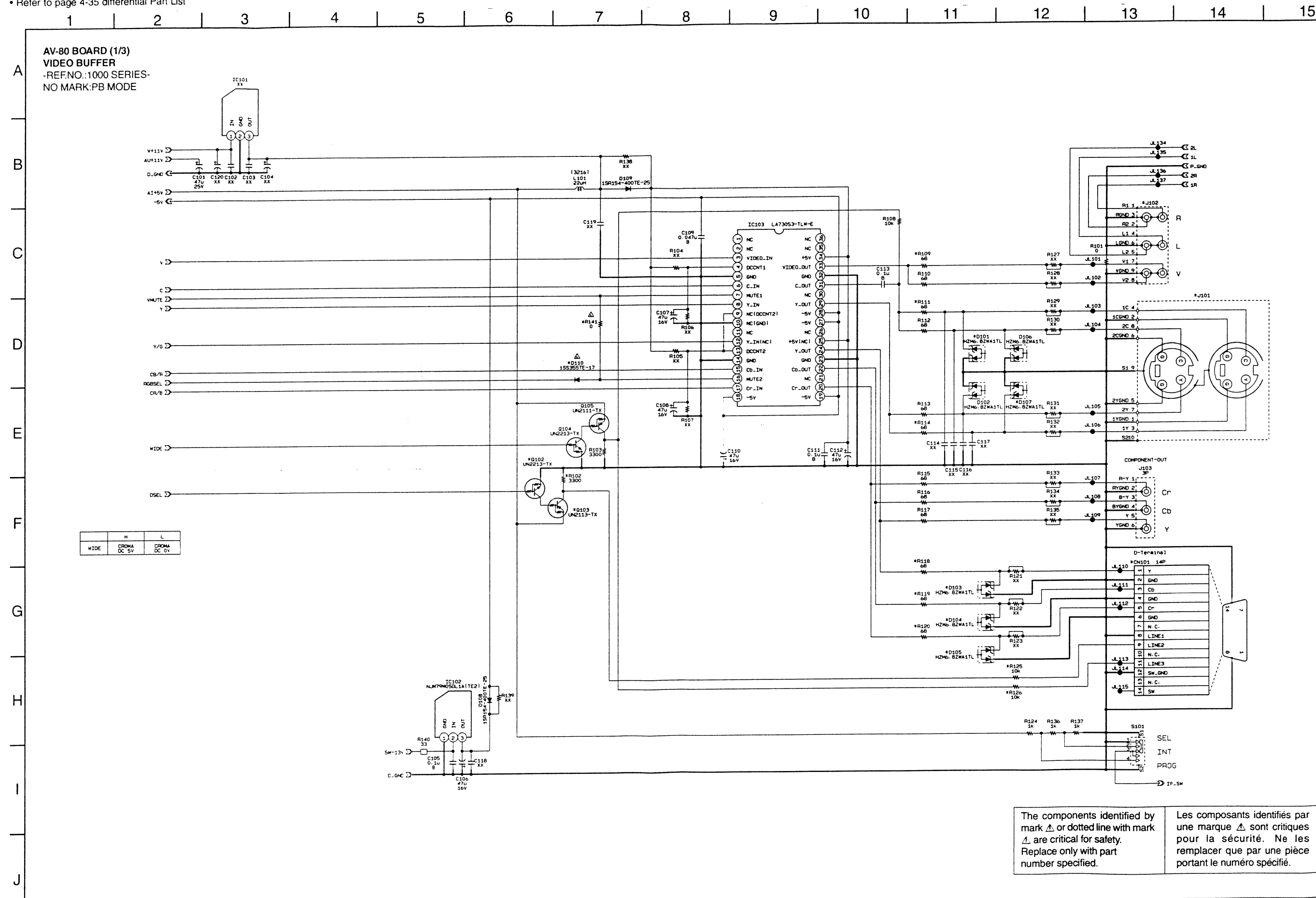




AV-64 BOARD


A SIDE		B SIDE			
IC103	A-9	D101	D-6	IC101	E-12
IC201	C-11	D102	D-7	IC102	D-12
IC202	D-10	D103	E-11		
IC203	D-10	D104	E-11	Q102	B-4
IC301	E-12	D105	E-11	Q103	B-4
IC302	A-11	D106	D-7	Q104	B-4
IC303	D-8	D107	D-7	Q105	B-4
IC304	D-5	D108	D-11	Q204	E-3
IC305	E-12	D109	B-5	Q206	E-4
		D110	B-4	Q207	E-4
Q201	B-10	D301	D-9	Q208	E-3
Q202	B-10	D303	D-6	Q209	E-2
Q203	B-10	D305	E-8	Q301	D-1
Q313	D-4	D306	D-8	Q302	D-6
Q314	E-4	D307	D-8	Q303	E-6
		D308	D-9	Q304	E-6
		D309	D-9	Q305	E-5
				Q306	E-5
				Q307	D-6
				Q308	D-6
				Q309	D-6
				Q311	E-9
				Q312	C-6

For Schematic Diagram

- Refer to page 4-29 for printed wiring board of AV-80 board.
- Refer to page 4-3 for waveform
- Refer to page 4-35 differential Part List



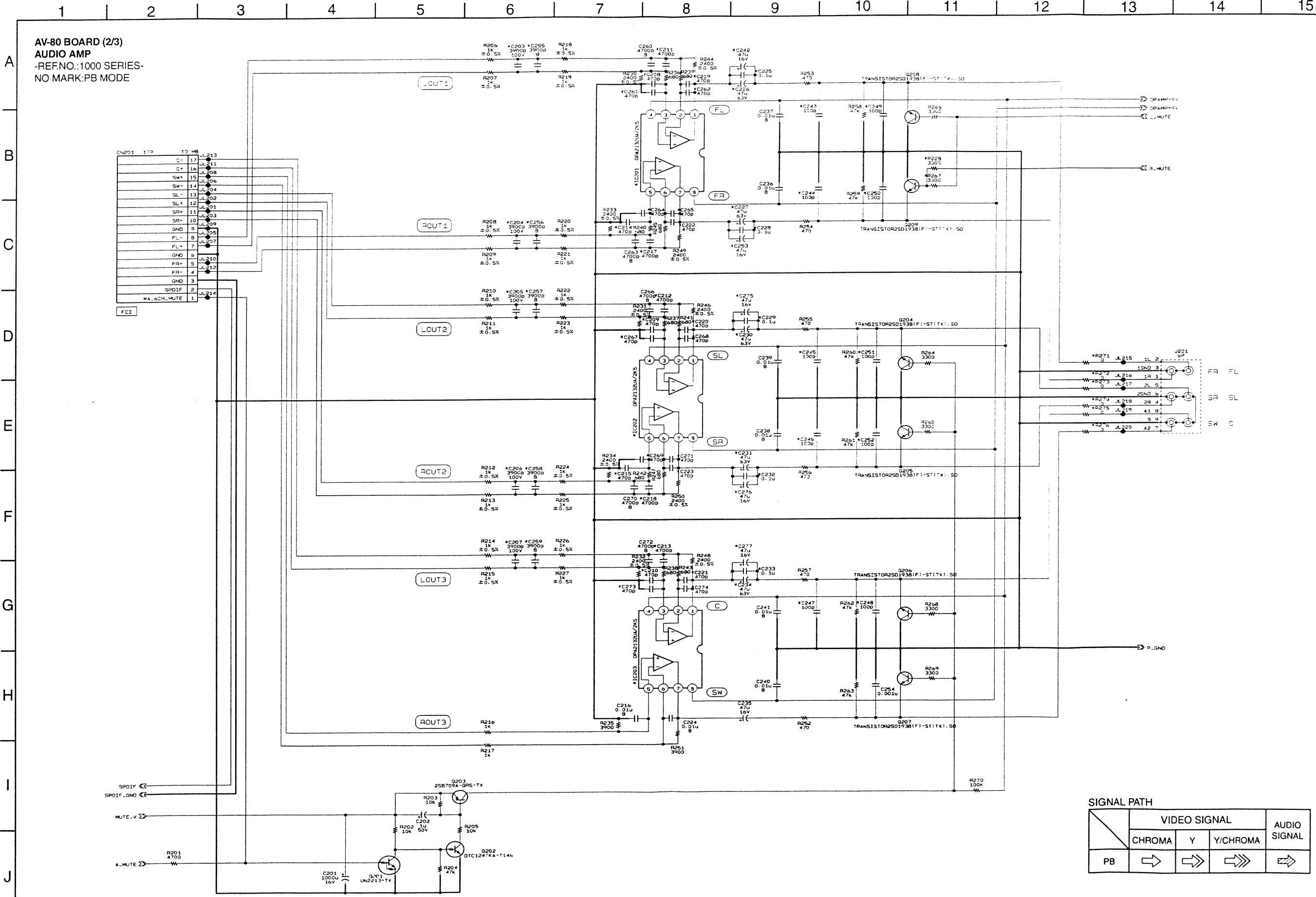
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

DVP-NS930V

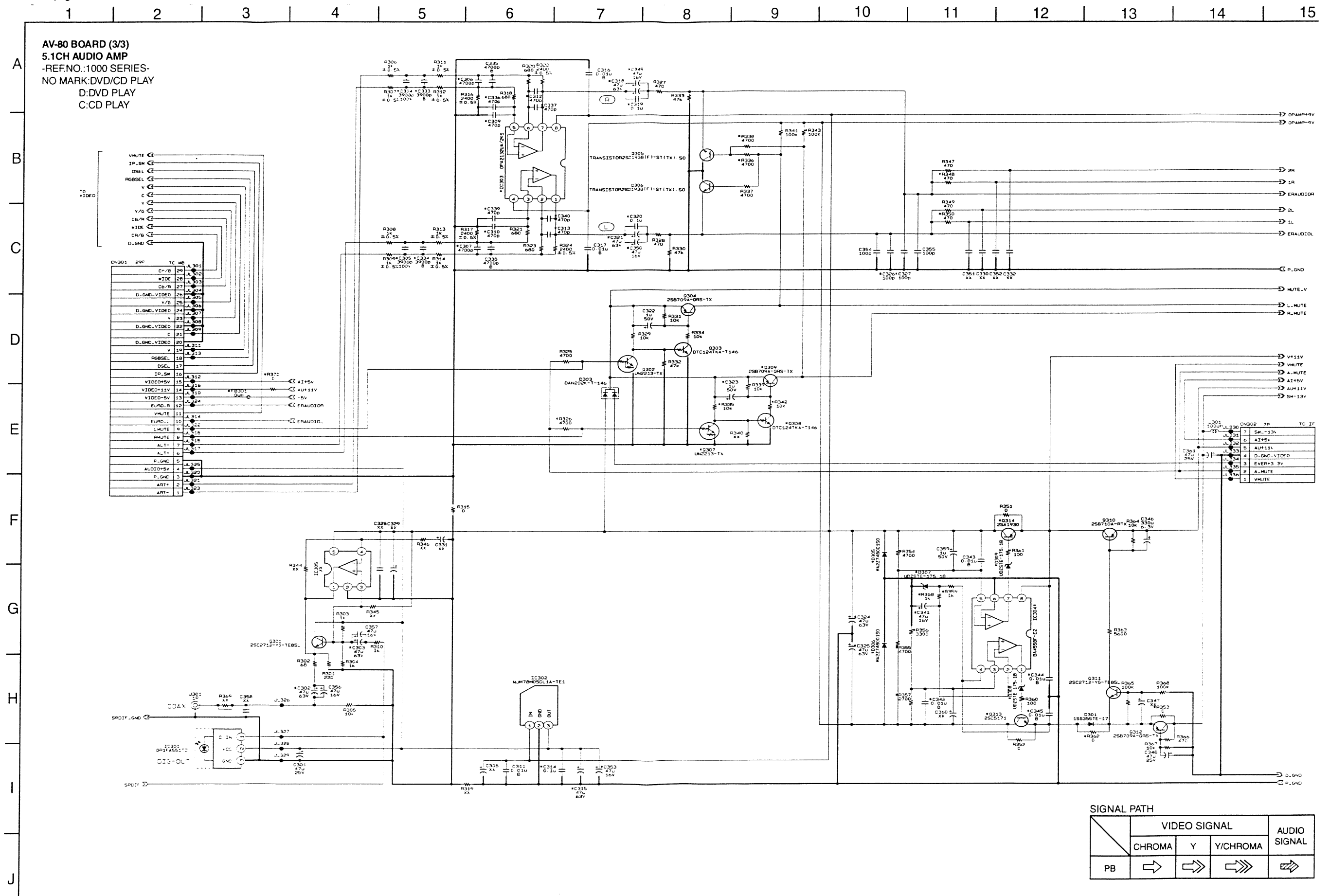
For Schematic Diagram

- Refer to page 4-29 for printed wiring board of AV-80 board.
- Refer to page 4-3 for waveform
- Refer to page 4-35 differential Part List



For Schematic Diagram

- Refer to page 4-29 for printed wiring board of AV-80 board.
- Refer to page 4-3 for waveform
- Refer to page 4-35 differential Part List

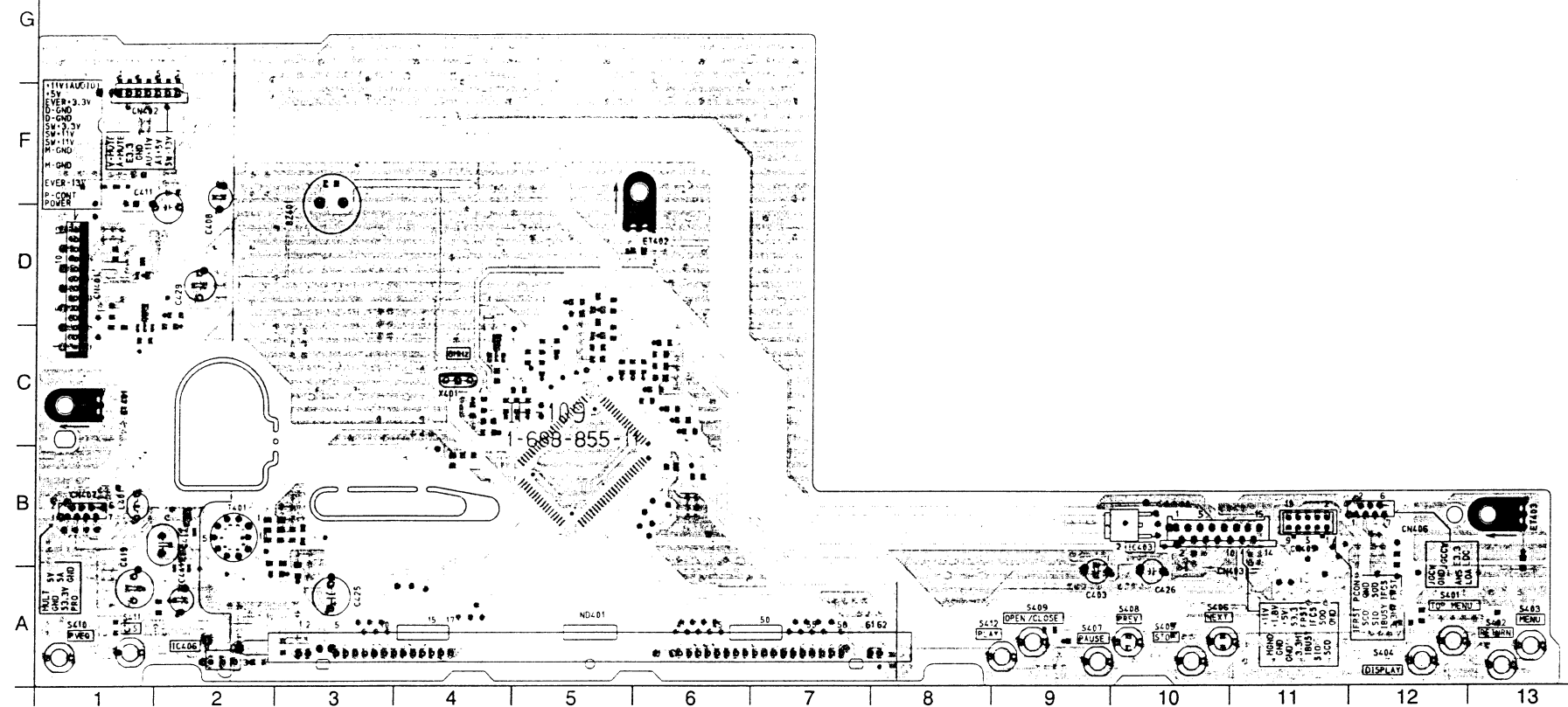


AV-80 BOARD differential Part List (1/3-3/3)

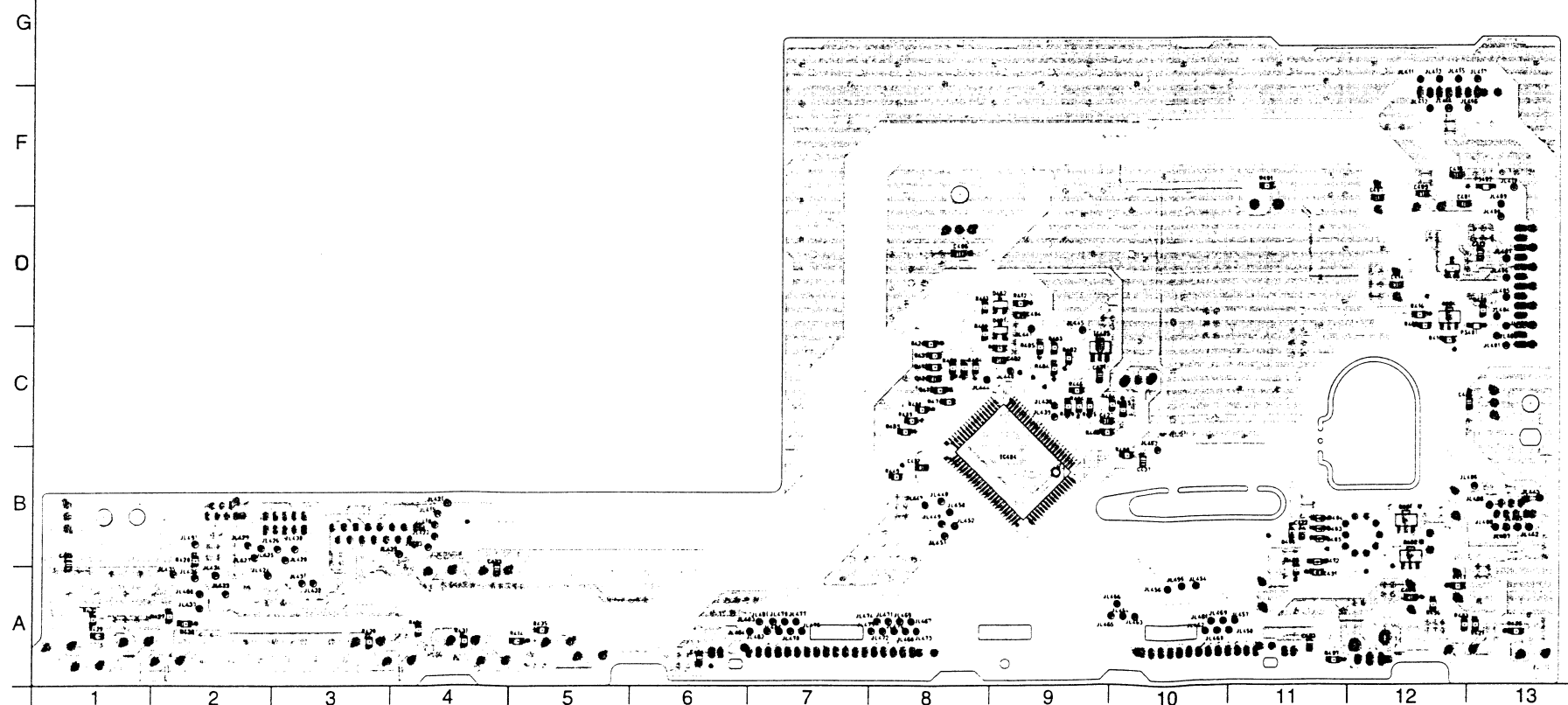
	HK	RUS	AEP/UK
C203	XX	3900PF	3900PF
C204	XX	3900PF	3900PF
C205	XX	3900PF	3900PF
C206	XX	3900PF	3900PF
C207	XX	3900PF	3900PF
C255	0.0039UF	XX	XX
C256	0.0039UF	XX	XX
C257	0.0039UF	XX	XX
C258	0.0039UF	XX	XX
C259	0.0039UF	XX	XX
C304	XX	3900PF	3900PF
C305	XX	3900PF	3900PF
C323	XX	1UF	1UF
C333	0.0039UF	XX	XX
C334	0.0039UF	XX	XX
D101	HZM6.8ZWA1TL	XX	XX
D107	HZM6.8ZWA1TL	XX	XX
D110	XX	1SS355TE-17	1SS355TE-17
J101	XX	4P	4P
J102	6P	3P	3P
J103	3P	3P	3P
J301	1P	1P	1P
Q307	XX	UN2213-TX	UN2213-TX
Q308	XX	DTC124TKA-T146	DTC124TKA-T146
Q309	XX	2SB709A-QRS-TX	2SB709A-QRS-TX
R109	68	XX	XX
R111	68	XX	XX
R114	68	XX	XX
R118	68	XX	XX
R119	68	XX	XX
R120	68	XX	XX
R141	0	10K	10K
R228	XX	3.3K	3.3K
R267	3.3K	XX	XX
R271	0	100	100
R272	0	100	100
R273	0	100	100
R274	0	100	100
R275	0	100	100
R276	0	0UH	0UH
R326	XX	4.7K	4.7K
R335	XX	10K	10K
R336	4.7	XX	XX
R338	XX	4.7K	4.7K
R339	XX	10K	10K
R342	XX	10K	10K
R343	XX	100K	100K
R348	470	XX	XX
R350	470	XX	XX


IF-109 (INTERFACE CONTROL) PRINTED WIRING BOARD

IF-109 BOARD (SIDE A)



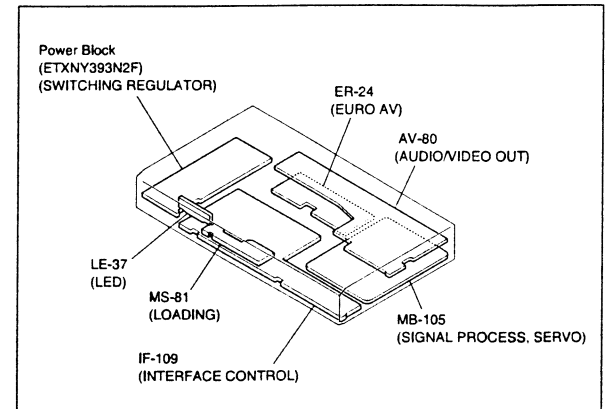
IF-109 BOARD (SIDE B)



-  : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



IF-109 BOARD

A SIDE

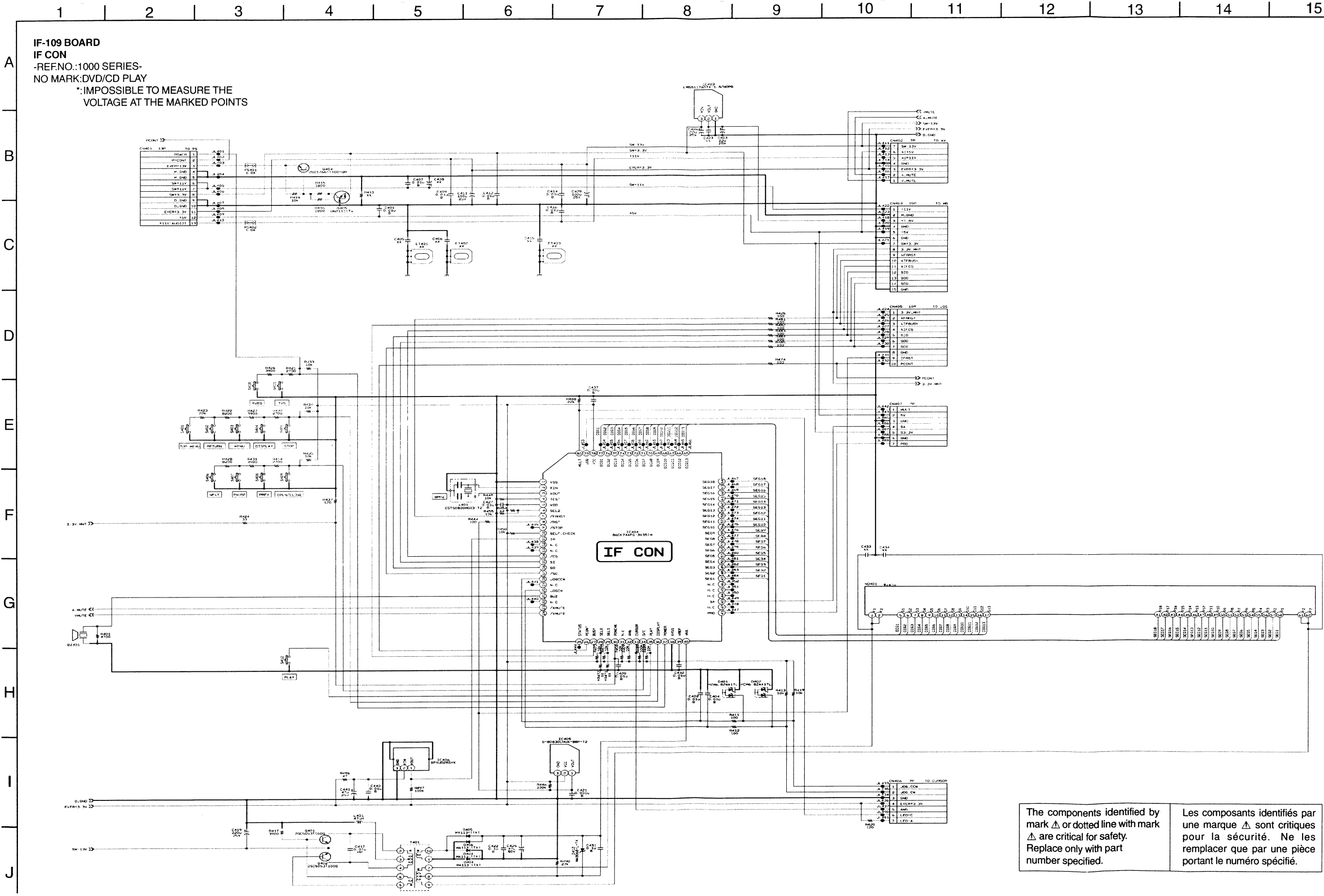
IC403 B-10
IC406 A-2

B SIDE

D401	D-9
D402	D-9
D403	B-11
D404	B-11
D405	B-11
D406	B-11
D412	B-11
IC404	C-9
IC405	D-9
Q401	B-12
Q402	B-12
Q404	D-12
Q405	D-12

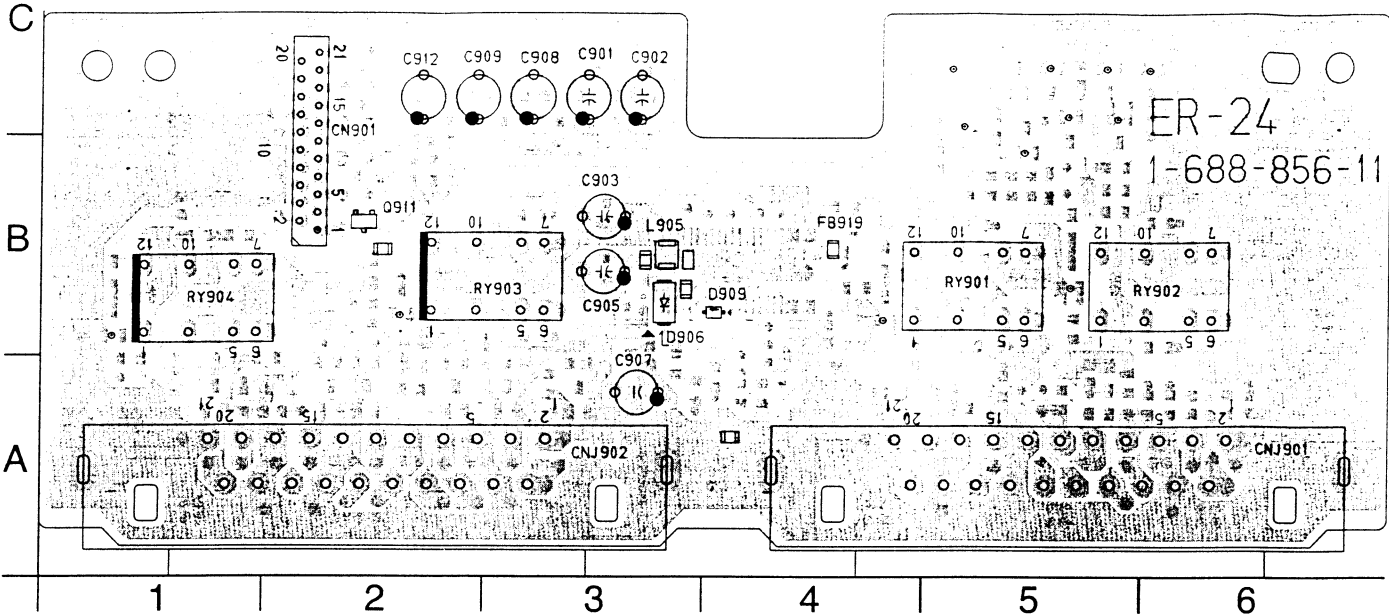
For Schematic Diagram

- Refer to page 4-39 for printed wiring board of IF-109 board.
- Refer to page 4-3 for waveform

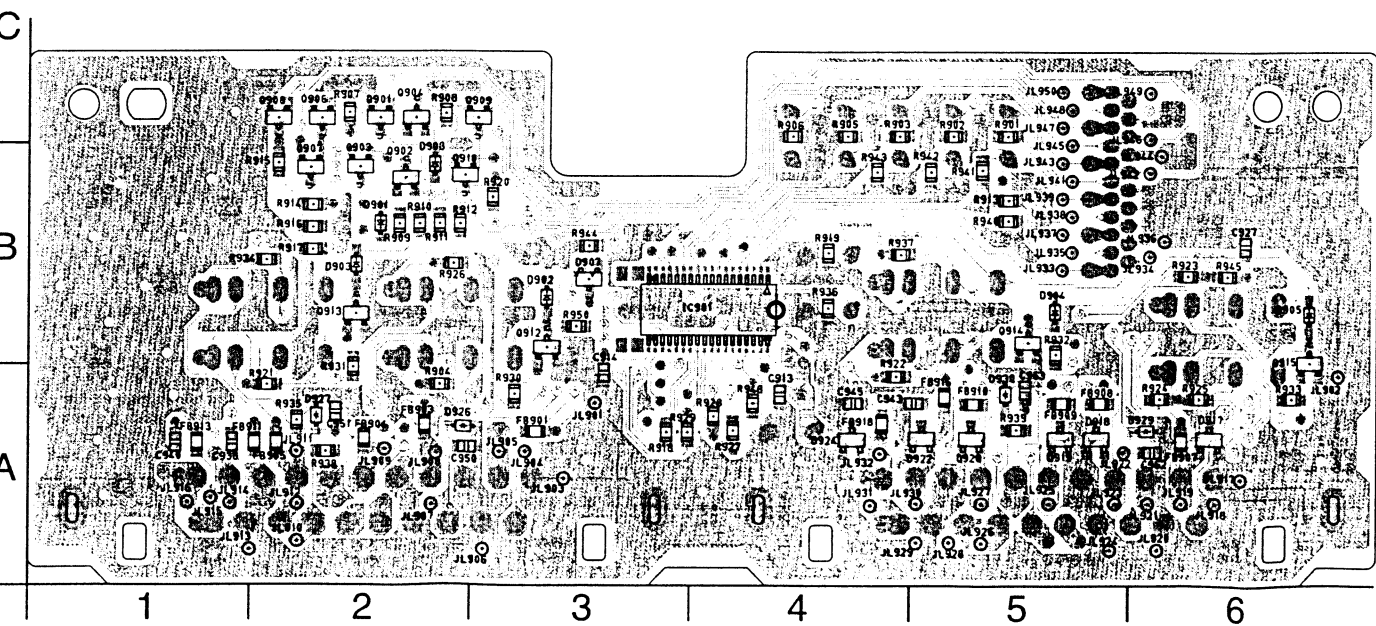



ER-24 (EURO AV) PRINTED WIRING BOARD

ER-24 BOARD (SIDE A)



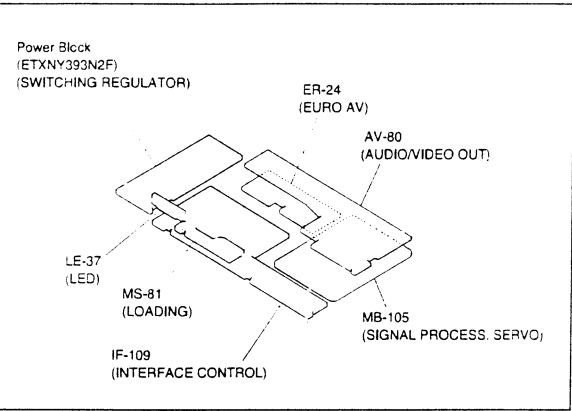
ER-24 BOARD (SIDE B)



•  : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



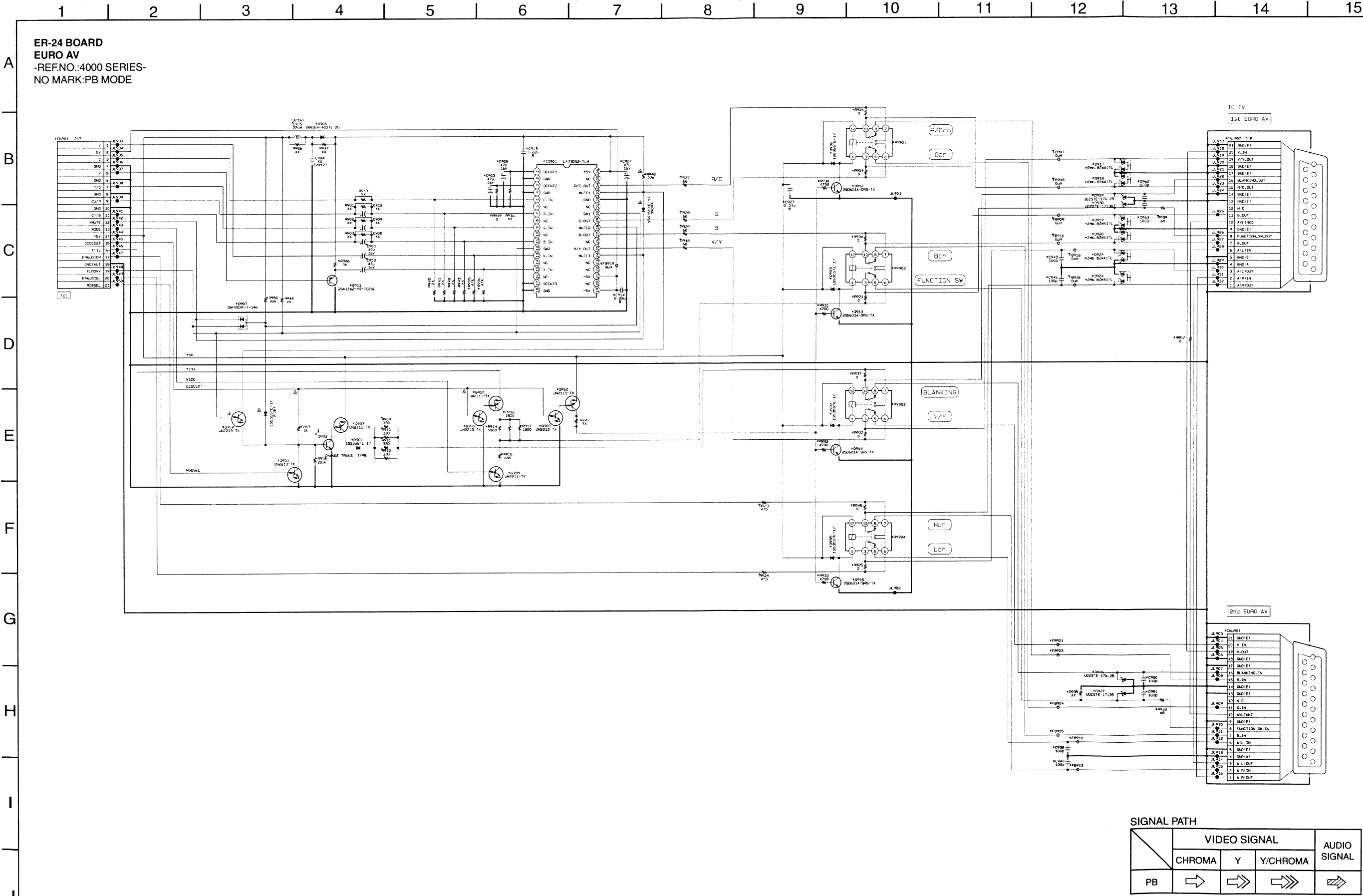
ER-24 BOARD

A SIDE	B SIDE
D909 B-4	D901 B-2
Q911 B-2	D902 B-3
	D903 B-2
	D904 B-5
	D905 B-6
	D907 B-3
	D908 B-2
	D917 1-6
	D918 A-5
	D919 A-5
	D920 A-5
	D922 A-5
	D924 A-4
	D926 A-2
	D927 A-2
	D929 A-6
	D930 A-5
	Q901 C-2
	Q902 B-2
	Q903 B-2
	Q904 C-2
	Q906 C-2
	Q907 B-2
	Q908 C-2
	Q909 C-3
	Q910 B-2
	Q912 B-3
	Q913 B-2
	Q914 B-5
	Q915 A-6

DVP-NS930V

For Schematic Diagram

- Refer to page 4-43 for printed wiring board of ER-24 board.
- Refer to page 4-3 for waveform
- Refer to page 4-47 differential Part List



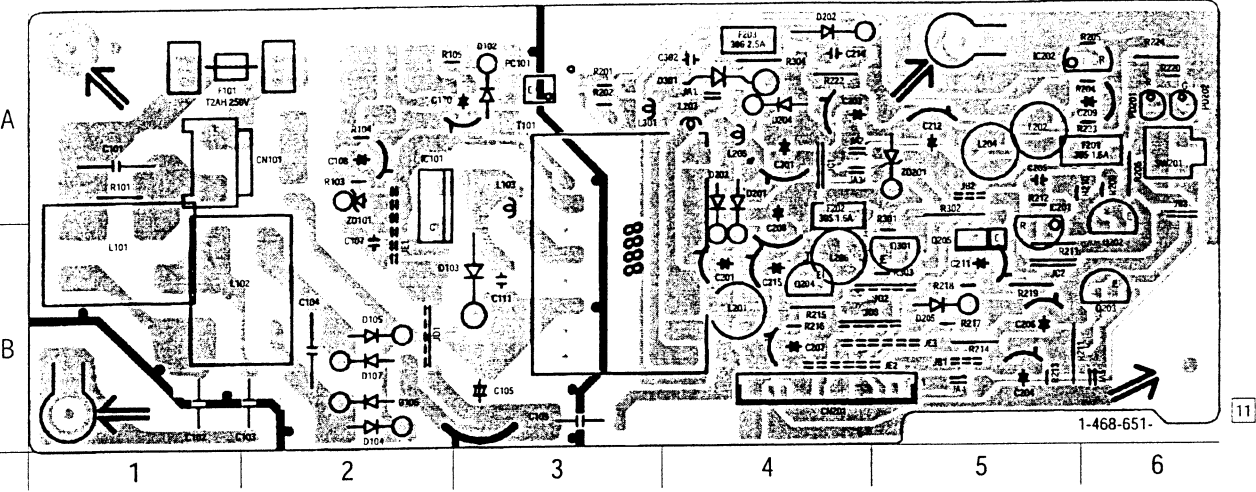
ER-24 BOARD differential Part List


	HK	RUS	AEP/UK
C901	XX	47UF	47UF
C902	XX	47UF	47UF
C903	XX	47UF	47UF
C905	XX	47UF	47UF
C907	XX	47UF	47UF
C913	XX	0.22UF	0.22UF
C914	XX	0.22UF	0.22UF
C927	XX	0.01UF	0.01UF
C938	XX	100PF	100PF
C940	XX	100PF	100PF
C943	XX	100PF	100PF
C945	XX	100PF	100PF
C950	XX	100PF	100PF
C951	XX	100PF	100PF
C962	XX	100PF	100PF
C963	XX	100PF	100PF
CN901	XX	FPC/FFC(1MM PIC)21P	FPC/FFC(1MM PIC)21P
CNJ901	XX	21P	21P
CNJ902	XX	21P	21P
D901	XX	1SS355TE-17	1SS355TE-17
D902	XX	1SS355TE-17	1SS355TE-17
D903	XX	1SS355TE-17	1SS355TE-17
D904	XX	1SS355TE-17	1SS355TE-17
D905	XX	1SS355TE-17	1SS355TE-17
D906	XX	1SR154-400TE-25	1SR154-400TE-25
D907	XX	DAP202K-T-146	DAP202K-T-146
D908	XX	1SS355TE-17	1SS355TE-17
D909	XX	1SS355TE-17	1SS355TE-17
D917	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D918	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D919	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D920	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D922	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D924	XX	HZM6.8ZWA1TL	HZM6.8ZWA1TL
D926	XX	UDZSTE-176.2B	UDZSTE-176.2B
D927	XX	UDZSTE-1713B	UDZSTE-1713B
D929	XX	UDZSTE-176.2B	UDZSTE-176.2B
D930	XX	UDZSTE-1713B	UDZSTE-1713B
FB901	XX	0UH	0UH
FB903	XX	0UH	0UH
FB904	XX	0UH	0UH
FB905	XX	0UH	0UH
FB907	XX	0UH	0UH
FB908	XX	0UH	0UH
FB909	XX	0UH	0UH
FB910	XX	0UH	0UH
FB911	XX	0UH	0UH
FB913	XX	0UH	0UH
FB916	XX	0UH	0UH
FB918	XX	0UH	0UH
FB919	XX	0	0
IC901	XX	LA73052-TLM	LA73052-TLM
L905	XX	22UH	22UH
Q901	XX	UN2213-TX	UN2213-TX
Q902	XX	UN2210-TX	UN2210-TX
Q903	XX	UN2111-TX	UN2111-TX
Q904	XX	UN2213-TX	UN2213-TX

	HK	RUS	AEP/UK
Q906	XX	UN2213-TX	UN2213-TX
Q907	XX	UN2111-TX	UN2111-TX
Q908	XX	UN2211-TX	UN2211-TX
Q909	XX	UN2213-TX	UN2213-TX
Q910	XX	UN2111-TX	UN2111-TX
Q911	XX	2SA1162-YG-TE85L	2SA1162-YG-TE85L
Q912	XX	2SD601A-QRS-TX	2SD601A-QRS-TX
Q913	XX	2SD601A-QRS-TX	2SD601A-QRS-TX
Q914	XX	2SD601A-QRS-TX	2SD601A-QRS-TX
Q915	XX	2SD601A-QRS-TX	2SD601A-QRS-TX
R905	XX	47K	47K
R906	XX	47K	47K
R907	XX	1K	1K
R908	XX	220K	220K
R909	XX	330	330
R910	XX	330	330
R911	XX	330	330
R912	XX	330	330
R914	XX	1.8K	1.8K
R915	XX	680	680
R916	XX	1.8K	1.8K
R917	XX	1.8K	1.8K
R918	XX	68	68
R919	XX	0	0
R923	XX	470	470
R924	XX	470	470
R927	XX	68	68
R928	XX	68	68
R929	XX	68	68
R930	XX	4.7K	4.7K
R931	XX	4.7K	4.7K
R932	XX	4.7K	4.7K
R933	XX	4.7K	4.7K
R938	XX	68	68
R939	XX	68	68
R946	XX	1K	1K
R948	XX	22K	22K
R950	XX	22K	22K
R957	XX	0	0

ETXNY393N2F (SWITCHING REGULATOR) PRINTED WIRING BOARD

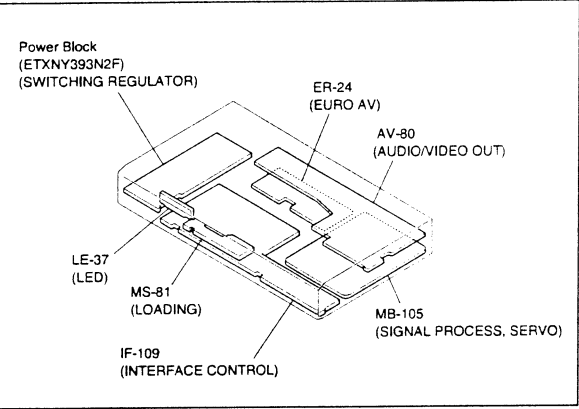
ETXNY393N2F BOARD



•  : Uses unleaded solder.

For printed wiring board

There are a few cases that the part printed on this diagram isn't mounted in this model.



ETXNY393N2F BOARD

CN101	A-1
CN201	B-4
D102	A-3
D103	B-3
D104	B-2
D105	B-2
D106	B-2
D107	B-2
D201	A-4
D202	A-4
D203	A-4
D205	B-5
D301	A-4
IC101	A-2
IC201	B-5
IC202	A-5
Q202	B-6
Q203	B-6
Q204	B-4
Q205	B-5
Q301	B-5

SWITCHING REGULATOR
ETXNY393N2F

SWITCHING REGULATOR
ETXNY393N2F



DVP-NS930V

MEMO

SECTION 5

IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL PIN FUNCTION (MB-105 BOARD IC104)

Pin No.	Pin name	I/O	Function
1-5	HA17-HA21	O	Address bus A17-A21
6	HA22	-	Not used
7	WP	O	I2C EEPROM write protect output
8	XSACS	O	SACD DEC Chip select signal output
9	AVCC	-	Power supply (+3.3 V)
10	AVRH	-	Reference power supply (+3.3 V)
11	AVSS	-	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3
16	INT0	I	AV DEC Interrupt input
17	INT1	I	ARP Interrupt input
18	INT2	I	SDSP Interrupt input
19	INT3	-	Not used
20	INT4	I	IF CON Interrupt input
21	INT5	I	ADSP Interrupt input
22	INT6	I	ADSP Interrupt input
23	INT7	I	SACD DEC Interrupt input
24	VCC	-	Power supply (+3.3 V)
25	SI0	I	Serial bus 0 (data input)
26	SO0	O	Serial bus 0 (data output)
27	SC0	O	Serial bus 0 (clock output)
28	SI1	I	Serial bus 1 (data input)
29	SO1	O	Serial bus 1 (data output)
30	SC1	O	Serial bus 1 (clock output)
31	SI2	I	Serial bus 2 (data input)
32	SO2	O	Serial bus 2 (data output)
33	DVD/SACD	O	DVD/SACD Select signal output
34	VSS	-	Ground
35	XRST	O	System reset signal output
36	WIDE	O	WIDE Select signal output
37	RGBSEL	O	VIDEO Select signal output
38	SDA	I/O	I2C data input/output
39	SCL	O	I2C clock output
40	XSARST	O	SACD DEC Reset signal output
41	EUROV/Y	O	VIDEO Select signal output
42	EXT/DSEL	O	Line input/output select signal output
43	MD0	I	Input of mode select 0 (fixed at "H")
44	MD1	I	Input of mode select 1 (fixed at "L")
45	MD2	I	Input of mode select 2 (fixed at "L")
46	DREQ0	I	AV DEC DMA -REQ0 input
47	DACK0	O	AV DEC DMA -ACK0 output
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	AV DEC DMA -REQ1 input
50	DACK1	O	AV DEC DMA -ACK1 output
51	XIFCS	O	IF CON Chip select signal output
52	VSS	-	Ground
53	X1	O	Clock output (16.5 MHz)
54	X2	I	Clock input (16.5 MHz)
55	VCC	-	Power supply (+3.3 V)

Pin No.	Pin name	I/O	Function
56	CKSW1	I	Chuck Sensor input
57	OCSW1	I	Tray Sensor input
58	CS0X	O	External ROM chip select signal output
59	CS1X	O	Extranal RAM chip select signal output
60	CS2X	O	AV DEC Chip select signal output
61	CS3X	O	AV DEC Chip select signal output
62	CS4X	O	ARP Chip select signal output
63	CS5X	O	SDSP Chip select signal output
64	VCCI	-	Power supply (+1.8 V)
65	CS6X	-	Not used
66	CS7X	-	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	I	Test terminal (fixed at "H")
69	BRQ	I	Test terminal (fixed at "L")
70	XRD	O	Read enable signal output
71	XWRH	O	High byte write enable signal output
72	XWRL	O	Lower byte write enable signal output
73	NMIX	I	Not used (fixed at "H")
74	VCCI	-	Power supply (+1.8 V)
75	VSS	-	Ground
76	XFRRST	I	IF CON Reset signal input
77	CPUCK	O	CPU clock signal output
78	SMUTE	O	SACD mute signal output
79	XDACS	O	DAC (2ch, 6ch) chip select signal output
80	X38CS	O	ADSP chip select signal output
81	48/44.1K	O	PLL FS control signal output
82	XLDON	O	Laser diode mute signal output
83	MA_MUTE	O	Audio mute signal output
84	SRAMWE	O	External RAM write enable signal output
85-92	HD0-HD7	I/O	Data bus D0-D7 (16 bit only)
93-100	HD8-HD15	I/O	Data bus D8-D15 (16 bit) , D0-D7 (8 bit)
101	VSS	-	Ground
102-109	HA0-HA7	O	Address bus A00-A07
110	VCC	-	Power supply (+3.3 V)
111-118	HA8-HA15	O	Address bus A08-A15
119	VSS	-	Ground
120	HA16	O	Address bus A16

SECTION 6 TEST MODE

6-1. GENERAL DESCRIPTION

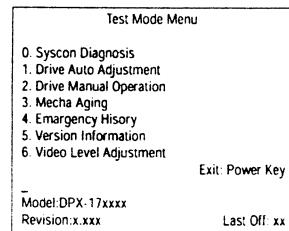
The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

6-2. STARTING TEST MODE

Press the **[TOP MENU]**, **[CLEAR]**, **[POWER]** keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.

To execute each function, select the desired menu and press its number on the remote commander.

To exit from the Test Mode, press the **[EXIT]** key.



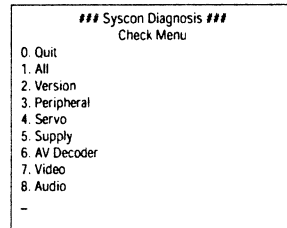
Power Off Information Code List

- 00 : Primary Power Off
- 01 : Power Off Request from SYSTEM CONTROL
- 02 : Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
- 03 : IF CON Judged that SYSTEM CONTROL is Faulty
- 04 : Power Off from Diagnosis Mode of IF CON
- 05 : Forced Power Off by the User
- 06 : Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.

On the Test Mode Menu screen, press **[0]** key on the remote commander, and the following check menu will be displayed.



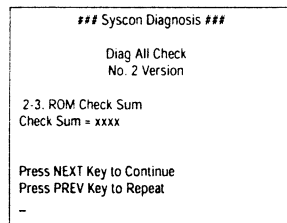
0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

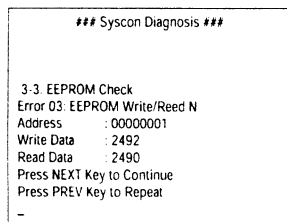
All items continuous check

This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.



For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.

Following the message, press **[▶▶]** key to go to the next item, or **[◀◀]** key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press **[0]** or **[ENTER]** key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.



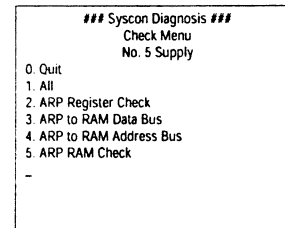
Press **[0]** key to quit the diagnosis, or **[◀◀]** key to repeat the same item where an error occurred, or **[▶▶]** key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.

Indication of "-" in the submenu means the check is not supported with the model.

For example, if "5. Supply" is selected, the following submenu will be displayed.



0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check.

This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.

Selecting 2 and subsequent items executes respective menus and outputs the results.

For the contents of each submenu, see "General Description of Checking Method" and "Check Items List".

General Description of Checking Method

2. Version

(2-2) Revision

ROM revision number is displayed.

Error: Not detected.

The revision number defined in the source file of ROM (IC106 or 107) is displayed with four digits.

(2-3) ROM Check Sum

Check sum is calculated.

Error: Not detected.

8-bit data are added up to the ROM (IC106 or 107) address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected. Compare the result with the specified value.

(2-4) Model Type

Model code is displayed.

Error: Not detected.

The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

(2-5) Region

Region code is displayed.

Error: Not detected.

The region code determined from the model code is displayed.

(2-6) Mount resistance confirmation check

Error 22: region code discord.

Accordance between region codes, one is detected with model resistance and destination resistance, and the other is detected with region resistance, is check.

If an error is detected, the region code determined with region resistance is displayed at "write data" and the region code determined with model resistance and destination resistance is displayed at "read data".

3. Peripheral

(3-2) EEPROM Check

Data write → read, and accord check

Error 03: EEPROM write/read discord.

0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-5) SADC check

Device reset → internal organs RAM check

Error 50: Write and read data discord.

(3-6) Venc Check

Data write → read, and accord check

Error 52: Write and read data discord.

Accessing to the SYSCON may be defective.

(3-7) ——— (not support)

(3-8) External RAM Check

Test Data write → read, and accord check

Error 02: The external RAM used in the system control is checked.

4. Servo

(4-2) Servo DSP Check

Data write → read, and accord check

Error 12: Read data discord

0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking. Also, OPT type "1 LASER" or "2 LASER" is displayed.

(4-3) Check is not supported.

(4-4) RF Amp Register Check

Date write → read and accord check

Error 13: RF Amp resister write, and read data discord.

After 0x01 is shifted to register which can read and write RF Amp for 8 bit operation, if write and read data are discord once, the check is performed unsuccessfully.

There may be a single piece of hardware is defective, mounted imperfect or not mounted.

5. Supply

(5-2) ARP Register Check

Data write → read, and accord check
Error 08: ARP register write, and read data discord
Data 0x00 to 0xFF is written sequentially to the ARPTMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus

Data write → read, and accord check
Error 09: ARP ↔ RAM data bus error
Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC301) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus

Data write → other address read discord check
Error 10: ARP ↔ RAM address bus error
Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).

Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.

First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.

If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

*** Syscon Diagnosis ***

5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address : 0000A55A
Write Data : 00000000
Read Data : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check

Data write → read, and accord check
Error 11: ARP RAM read data discord
The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC301) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1935 RAM

Data write → read, and accord check
Error 14: AVD RAM read data discord
The program code data stored in ROM (IC106 or 107) are copied to all areas of RAM (IC404, IC406) connected to the AVD (IC403) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 14, and the test is suspended.
During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1935 SP

ROM → AVD RAM → Video OUT
Error: Not detected.
The data including sub picture streams in ROM (IC106 or IC107) are transferred to the RAM (IC404, IC406) in AVD (IC403), and output as video signals from the AVD (IC403). Though OSD display becomes blank, the output of video signals continues until the key is pressed.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

(7-2) Color Bar

AVD color bar command write → Video OUT
Error: Not detected.
The command is transferred to the AVD, and the color bar signals are output from video terminals.
They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

(7-3) Composite Out

EURO-AV Composite video output check
AVD color bar command write → Video (EURO-AV Composite) OUT
Error: Not detected.
With the Component of video output turned off, the color bar signals are output from the EURO-AV terminal.

(7-4) Y/C Out

EURO-AV Y/C video output check
AVD color bar command write → Video (EURO-AV Y/C) OUT
Error: Not detected.
With the Y/C of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-5) RGB Out

EURO-AV RGB video output check
AVD color bar command write → Video (EURO-AV RGB) OUT
Error: Not detected.
With the RGB of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-6) Component Out

EURO-AV Component video output check
AVD color bar command write → Video (EURO-AV Component) OUT
Error: Not detected.
With the Component of video output turned on, the color bar signals are output from the EURO-AV terminal.

(7-7) Euro AV Through


AV Through output On/Off
Error: Not detected.
AV Through output is turned on.

8. Audio

(8-2) ARP → 1935

Error 15 : ARP → 1935 video NG
16 : ARP → 1935 audio NG

(8-3) Test Tone

Pink noise output
Error: not detected
Test tone is output, from only L and R2 channels of the model without DD output function, and from Ls and Rs of two channels of DD model.
After setting all outputs to ON, check for each channel is performed individually by pressing  to switch the output channel.

Check Items List

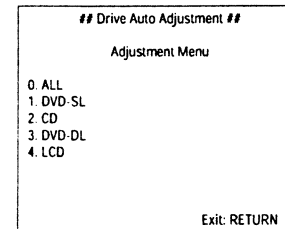
- 2) Version
- (2-2) Revision
- (2-3) ROM Check Sum
- (2-4) Model Type
- (2-5) Region
- (2-6) M/T Check
- 3) Peripheral
- (3-2) EEPROM Check
- (3-5) SADC Check
- (3-6) Venc Check (NS755V/NS915V)
- (3-7) Not support
- (3-8) External RAM check
- 4) Servo
- (4-2) Servo DSP Check
- (4-3) ——— (function not support)
- (4-4) RF Amp Register Check
- 5) Supply
- (5-2) ARP Register Check
- (5-3) ARP to RAM Data Bus
- (5-4) ARP to RAM Address Bus
- (5-5) ARP RAM Check
- 6) AV Decoder
- (6-2) 1935 RAM
- (6-3) 1935 SP
- 7) Video
- (7-2) Color Bar
- (7-3) Composite Out
- (7-4) Y/C Out
- (7-5) RGB Out
- (7-6) Component Out
- (7-7) Euro AV Through
- 8) Audio
- (8-2) ARP → 1935
- (8-3) Test Tone

Error Codes List

00: Error not detected
 01: RAM write/read data discord
 03: EEPROM NG
 04: Flash memory clear error
 05: Flash memory write error
 06: Flash memory read data discord
 08: ARP register read data discord
 09: ARP \longleftrightarrow RAM data bus error
 10: ARP \longleftrightarrow RAM address bus error
 11: ARP RAM read data discord
 12: Servo DSP NG
 13: RF Amp NG
 14: SDRAM NG
 15: ARP \rightarrow 1935 video NG
 16: ARP \rightarrow 1935 audio NG
 19: 1901UCODE Download NG
 1A: System call error (function not supported)
 1B: System call error (parameter error)
 1C: System call error (illegal ID number)
 20: System call error (time out)
 22: Resistance incorrect mounting
 50: SACD Decoder W/R NG
 52: Video Encoder W/R NG
 55: External RAM W/R NG
 90: Error occurred
 91: User verification NG
 92: Diagnosis cancelled.

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press **[1]** key on the remote commander, and the drive auto adjustment menu will be displayed.



Normally, **[0]** is selected to adjust DVD (single layer), CD, DVD (dual layer) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube. The disc used for adjustment must be the one specified for adjustment.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select **[0]** and press the **[ENTER]** key. First, the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, 1. DVD-SL disc, 2. CD disc, and 3. DVD-DL disc are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. You can exit the adjustment by pressing the **[■]** button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD-SL (single layer)

Select **[1]**, insert DVD single layer disc, and press **[ENTER]** key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. Sled Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Focus ON 0 with PI Level Measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto Focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. EQ Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. RF Level Measure
21. Jitter Measure
22. Eep Copy Loop Filter Offset
23. All Servo Stop

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Reset
2. Disc Check Memory CD
3. Set Disc Type: CD
4. Spdl Start
5. LD ON
6. Focus Error Check
7. Fcs ON 0 with PI Level Measure
8. Auto Track Offset Adjust L0
9. Trv Level Check
10. Tracking ON
11. CLVA ON
12. Sled ON
13. Auto focus Balance Adjust
14. Auto Loop Filter Offset Adjust
15. Auto Focus Gain Adjust L0
16. Auto Focus Balance Adjust L0
17. Eq Boost Adjust
18. Auto Loop Filter Offset Adjust
19. Auto Track Gain Adjust
20. Copy Adjustment Data to LCD
21. RF Level Measure
22. Jitter Measure
23. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

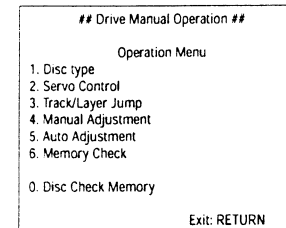
1. Sled Reset
2. Disc Check Memory DL
3. Set Disc Type DL
4. Spdl Start
5. LD ON
6. Fcs ON 1 with PI Level Measure
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Clva ON
10. Sled ON
11. Auto Focus Balance Adjust
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Measure
17. DVD DL Layer 0 Adjust
18. Focus Jump (L1 → L0)
19. Auto Track Offset Adjust L0
20. Tracking ON
21. Clva ON
22. Sled ON
23. Auto Focus Balance Adjust
24. Auto Focus Gain Adjust L0
25. Auto Focus Balance Adjust L0
26. Eq Boost Adjust L0
27. Auto Track Gain Adjust L0
28. Jitter Measure
29. All Servo Stop

4. LCD (SACD)

No adjustments, because the adjusted data of CD and DVD-DL are reflected to LCD disc and the adjusted data of CD and DVD-DL are reflected to SACD (hybrid disc).

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.



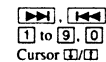
In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
The disc type must be set after a disc was loaded.
The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

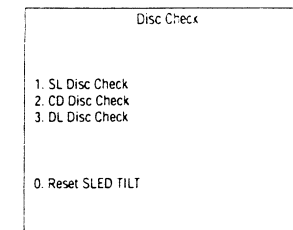


- Power OFF
- Servo stop
- Stop+Eject/Loading
- Return to Operation Menu or Test Mode Menu
- Transition between sub modes of menu
- Selection of menu items
- Increase/Decrease in manually adjusted value



Cursor [UP]/[DOWN]

0. Disc Check Memory

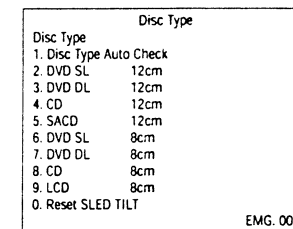


On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.

The adjustment must be executed more than once after default data were written.

From this screen, you can go to another mode by pressing [RIGHT] or [LEFT] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

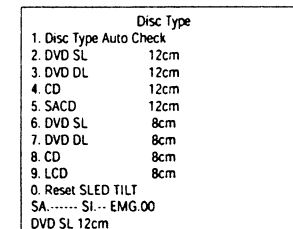
1. Disc Type



On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.

In performing manual operation, the disc type must be set.

Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.



Display when DVD SL 12cm disc was selected

Disc Type	
1. Disc Type Auto Check	
2. DVD SL	12cm
3. DVD DL	12cm
4. CD	12cm
5. SACD	12cm
6. DVD SL	8cm
7. DVD DL	8cm
8. CD	8cm
9. LCD	8cm
0. Reset SLED TILT	
CD	12cm

Display when CD 12cm disc was selected

0 Reset SLED TILT Reset the Sled and Tilt to initial position. (This model does not have Tilt device, so reset only the Sled to initial position.)

1 Disc Type Check Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct.

If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).

2 to **9** Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if **1** was selected.

2. Servo Control

Servo Control	
1. LD	Off R. Sled FWD
2. SP	Off L. Sled REV
3. Focus	Off
4. TRK.	Off
5. Sled	Off
6. CLVA	Off
7. FCS. Srch	Off
0. Reset SLED TILT	
DVD SL 12 cm	

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked. The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

0 Reset SLED TILT Reset the Sled and Tilt to initial position. (This model does not have Tilt device, so reset only the Sled to initial position.)

1 LD Turn ON/OFF the laser.

2 SP Turn ON/OFF the spindle.

3 Focus Search the focus and turn on the focus.

4 TRK Turn ON/OFF the tracking servo.

5 Sled Turn ON/OFF the sled servo. If PLL is not locked (or can not be locked), the sled servo does not be turned ON. (Indication remains as OFF)

6 CLVA Turn ON/OFF normal servo of spindle servo.

7 FCS. Srch Apply same voltage as that of focus search to the focus drive to check the focus drive system.

Sled FWD Move the sled outward. Perform this operation with the tracking servo turned off.

Sled REV Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump

Tracking/Layer Jump	
1. 1Tj FWD	R. Fj (L1 → L0)
2. 1Tj REV	L. Fj (L0 → L1)
3. 2Tj FWD	U. Lj (L1 → L0)
4. 2Tj REV	D. Lj (L0 → L1)
5. NTj FWD	
6. NTj REV	
7. 500Tj FWD	
8. 500Tj REV	
9. 10k/20k FWD	
0. 10k/20k REV	
DVD SL 12 cm	

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

1 1Tj FWD 1-track jump forward.

2 1Tj REV 1-track jump reverse.

3 2Tj FWD 2-track jump forward.

4 2Tj REV 2-track jump reverse.

5 NTj FWD N-track jump forward.

6 NTj REV N-track jump reverse.

7 500Tj FWD Fine search forward.

8 500Tj REV Fine search reverse.

9 10k/20k FWD Direct search forward.

0 10k/20k REV Direct search reverse.

- The following commands are valid for DVD-DL disc only -

Fj (L1 → L0) Focus jump forward. (Trk/Sled Servo OFF)

Fj (L0 → L1) Focus jump reverse. (Trk/Sled Servo OFF)

Lj (L1 → L0) Layer jump forward. (Trk/Sled Servo ON)

Lj (L0 → L1) Layer jump reverse. (Trk/Sled Servo ON)

4. Manual Adjustment

Manual Adjustment: Up/Down	
1. TRK. Offset	
2. Focus Gain	
3. TRK. Gain	
4. Focus Offset	
5. Focus Balance	
6. L.F. Offset	
7. Analog FRSW	
8. PLL Dac Gain	
9. EQ BOOST	
0. GD ADJ	
Adjustment: Up/Down	
DVD SL 12cm	

On this screen, each item can be adjusted manually. Select the desired number **1** to **0** from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with **Δ** key or **▽** key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

1 TRK. Offset Adjusts tracking offset.

2 Focus Gain Adjusts focus gain.

3 TRK. Gain Adjusts track gain.

4 Focus Offset Adjusts focus offset.

5 Focus Balance Adjusts focus balance.

6 L.F. Offset Adjusts loop filter offset.

7 Analog FRSW Sets the shifting switch for analog feedback circuit.

8 PLL Dac Gain Adjusts PLL D/A converter gain.

9 EQ BOOST Adjusts amount of boost of equalizer.

0 GD ADJ Adjusts amount of group delay

5. Auto Adjustment

Auto Adjustment	
1. Auto TRK. Offset	
2. Auto Focus Balance	
3. Auto Focus Offset	
4. Auto Focus Gain	
5. Auto TRK. Gain	
6. Auto EQ	
7. Auto L.F. Offset	
8. Auto Group Delay	
SA..... SI... EMG. 00	
DVD SL 12 cm	

On this screen, each item can be adjusted automatically. Select the desired number **1** to **8** from the remote commander, and selected item is adjusted automatically.

1 Auto TRK. Offset Adjusts tracking offset.

2 Auto Focus Balance Adjusts focus balance.

3 Auto Focus Offset Adjusts focus offset.

4 Auto Focus Gain Adjusts focus gain.

5 Auto TRK. Gain Adjusts track gain.

6 Auto EQ

7 Auto L.F. Offset Adjusts loop filter offset.

8 Auto Group Delay

6. Memory Check

Display images are shown as follows, and all three screens are able to switch.

EEPROM DATA 1	
	-- DL --
	CD LCD SL LO L1
Focus Gain	xx xx xx xx xx
TRK. Gain	xx xx xx xx xx
FCS Balnce	xx xx xx xx xx
Focus Bias	xx xx xx xx xx
TRV Offset	xx xx xx xx xx
L.F. Offset	xx xx xx xx xx
EQ. Boost	xx xx xx xx xx
UP : Last Data	
DOWN : Next Data	
CLEAR : Default	Setpage.1/3

EEPROM DATA 2	
	-- DL --
	CD LCD SL LO L1
RF Jitter	xx .. xx xx xx
RF Level	xx .. xx
FE Level	xx .. xx
FE Balance	xx .. xx
TRV Level	xx .. xx
TE Gain	xx xx
PI Level	xx .. xx xx ..
UP : PREV Data	
DOWN : Next Data	
CLEAR : Default	Set page.2/3

EEPROM DATA 3	CD	LCD	SL	DL	---
Analog FRSW	xx	xx	xx	xx	xx
PLL Dac Gain	xx	xx	xx	xx	xx
Mirror Time	xx	xx	xx	xx	xx
THR A&L	xx	xx	xx/xx	xx	xx
UP : PREV Data					
DOWN : First Data					
CLEAR : Default	Set				page 3/3

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the **[CLEAR]** key, but be careful that they are not recoverable after initialization.

Before clearing the adjusted data, make a note of the set data. This screen will also appear if **[0]** All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.

Data of "THR A & L" on page 3/3 can not be changed if default set is done.

6-6. MECHA AGING

Mecha Aging
Press OPEN key
Abort: STOP key

On the Test Mode Menu screen, selecting **[3]** executes the aging of mechanism. First, open the tray and load a disc. Press the **[>]** key, and the aging will start. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the **[■]** key. After the operation has stopped, unload the disc and press again the **[■]** key or the **[RETURN]** key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY

### EMG. History ###		
Laser Hours	CD	xxhxxm
	DVD	xxhxxm
1.	00 00 00 00 00 00 00	00 00 00 00 00 00 00
2.	00 00 00 00 00 00 00	00 00 00 00 00 00 00
Select: 1-9	Scroll: UP/DOWN	
(1: Last EMG.)	Exit: RETURN	

On the Test Mode Menu screen, selecting **[4]** displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with **[↑]** key or **[↓]** key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

① Clearing laser hours

Press **[DISPLAY]** and **[CLEAR]** keys in this order.
Both CD and DVD data are cleared.

② Clearing emergency history

Press **[TOP MENU]** and **[CLEAR]** keys in this order.

③ Initializing set up data

Press **[MENU]** and **[CLEAR]** keys in this order.
The data have been initialized when "Set Up Initialized" message is displayed. The EMG. History screen will be restored soon.

6-8. VERSION INFORMATION

```

### Version Information ###

IF con.          Ver.x.xxx(yyyy)
                  Group      xx

SYScon.          Ver.x.xxx(yyyy)
                  Model      xx
                  Region     0x

Servo DSP Ver: x.xxx
AVD ucode Ver: xxxxxxxx
OPT TYPE : x LASER
Exit RETURN

```

The ROM version, region code, OPT type, etc. are displayed if **[5]** is selected in the Test Mode Menu.
The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

Note : After down loading ROM data, sometimes it happens that checksum is not the same as that of ROM data which has been down loaded. In such a case, go back to the menu and select "0. Syscon Diagnosis", then select "1. All" in "2. Version". If the result of this operation does not give an agreement, it must be either Down Load error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting **[6]** displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. IF-109 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
 - Grid check
 - Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (P-CONT) of MB-105 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

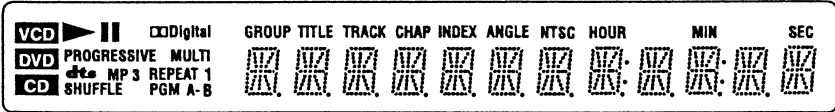
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC404) was reset, the input to 10pin (SELF CHECK) is judged and if "Low" is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-105 and AV-80 boards are not connected). While pressing the **[■]** key on the main unit with the IF CON in STANDBY mode, enter **[RETURN] → [DISPLAY]** (or **[SET UP]**) on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

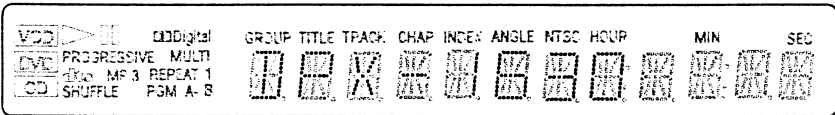
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

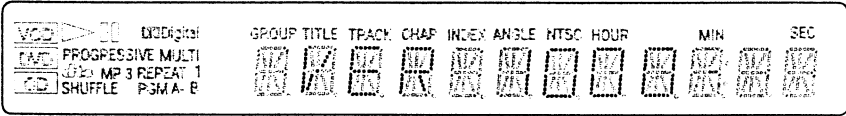
(1) FLD and LED all ON (for 5 seconds)



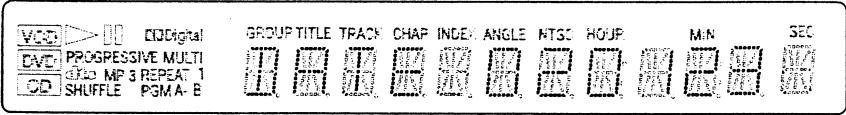
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC404: Pin No. (Signal)				
	Pin ① (CURSOR)	Pin ② (O/C)	Pin ③ (PLAY)	Pin ④ (DISPLAY)	Pin ⑤ (POWER)
0 - 0.2	ENTER	OPEN/CLOSE	PLAY	STOP	POWER
0.6 - 0.82	DOWN	PREVIOUS	-	DISPLAY	TVS
1.16 - 1.47	LEFT	PAUSE	-	MENU	PVEQ
1.8 - 2.12	UP	NEXT	-	RETURN	-
2.48 - 2.7	RIGHT	-	-	TOP MENU	-
3.3	-	-	-	-	-

2-3-1. FLD and LED All ON

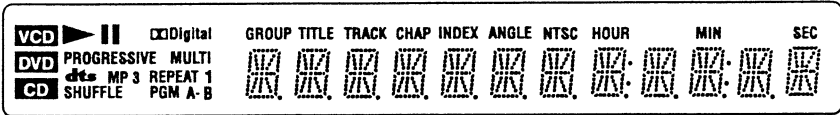
2-3-1-1. Transition Keys in Self Check Mode

- [ENTER] key and [DOWN] key on the main unit
- [ENTER] key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.

Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

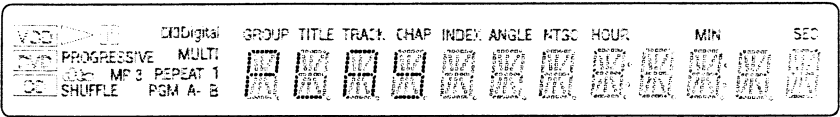
2-3-2-1. Transition Keys in Self Check Mode


- Keys on main unit except keys transited in self check

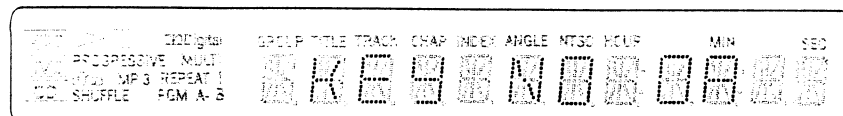
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the [DISPLAY] key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

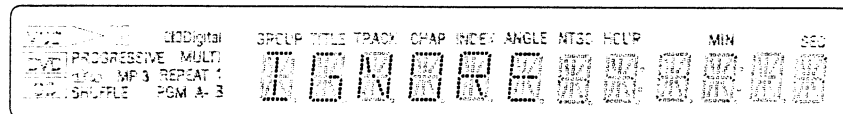
FLD display (at input of [ENTER] key on the main unit)



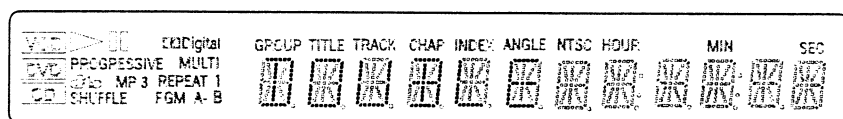
Key code display (at input of  key, Key code: 0Ah)



At input of faulty voltage



When two keys are pressed




2-3-3. Remote Commander Key Name Display and Key Code Display

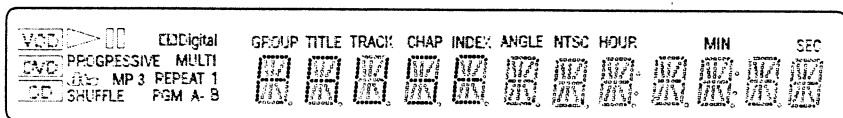
2-3-3-1. Transition Keys in Self Check Mode


- Remote commander keys except keys transited in self check

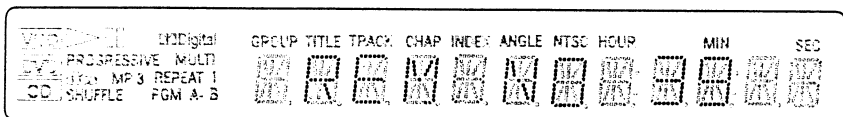
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the **[DISPLAY]** key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of  key)



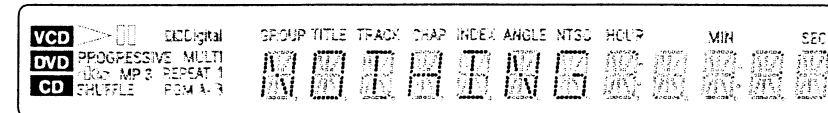
Remote commander key code display (at input of  key, Key code: 39h)



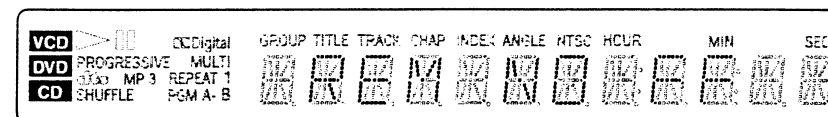
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

Communication error display (at no key input)




Communication error display (at code display without input of the remote commander)




2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

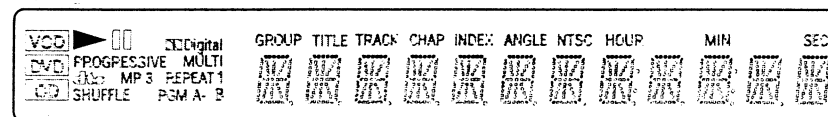
2-3-5-1. Transition Keys in Self Check Mode

-  on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display
(This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

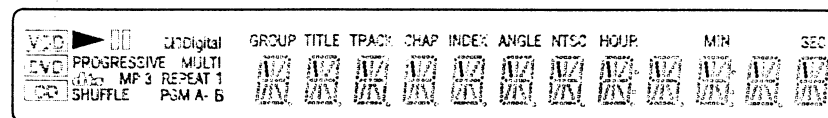
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when  key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test



↓ (Input in CW direction)



2-3-6. FLD Grid Test Display and SHUTTLE Click Operation Test

2-3-6-1. Transition Keys in Self Check Mode

- on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

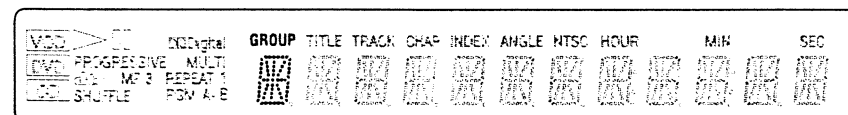
2-3-6-2. Operation and Display

The Self Check mode transits to this mode when key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test



↓ (Input in CW direction)



2-3-7. LED Test Display

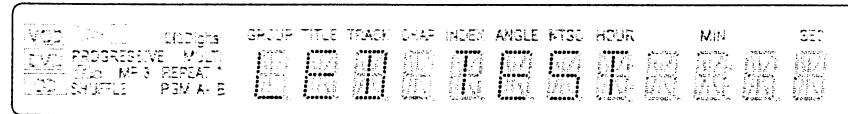
2-3-7-1. Transition Keys in Self Check Mode

- on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display (This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

FLD display during LED Test



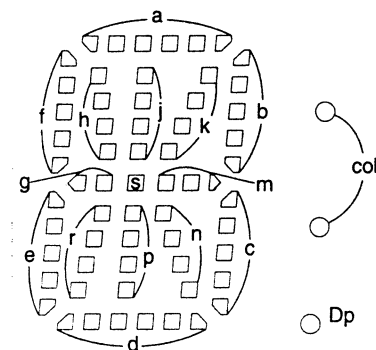
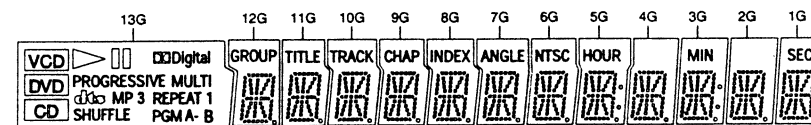
2-3-8. Beep Sound Test

2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 1kHz (100ms) is generated.



(12G~1G)

ANODE CONNECTION

	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1		a	a	a	a	a	a	a	a	a	a	a	a
P2		h	h	h	h	h	h	h	h	h	h	h	h
P3		j	j	j	j	j	j	j	j	j	j	j	j
P4		k	k	k	k	k	k	k	k	k	k	k	k
P5		b	b	b	b	b	b	b	b	b	b	b	b
P6		f	f	f	f	f	f	f	f	f	f	f	f
P7		m	m	m	m	m	m	m	m	m	m	m	m
P8		s	s	s	s	s	s	s	s	s	s	s	s
P9		g	g	g	g	g	g	g	g	g	g	g	g
P10		e	e	e	e	e	e	e	e	e	e	e	e
P11		n	n	n	n	n	n	n	n	n	n	n	n
P12		p	p	p	p	p	p	p	p	p	p	p	p
P13		r	r	r	r	r	r	r	r	r	r	r	r
P14		c	c	c	c	c	c	c	c	c	c	c	c
P15		d	d	d	d	d	d	d	d	d	d	d	d
P16		Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	-
P17		-	-	-	-	-	-	-	col	-	col	-	-
P18		GROUP	TITLE	TRACK	CHAP	INDEX	ANGLE	NTSC	HOUR	-	MIN	-	SEC

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the unit is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-105 board and AV-80 board, and with the SELF CHECK (pin ⑨) of IF CON (IC404) on the IF-109 board kept in low state, supply AC, and the IF CON self-diagnosis mode will be forcibly activated. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than "NOTHING" is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-105 board)

1. The test mode menu is not displayed.

1-1. Board visual check

Check that the ICs of SYSCON (IC104), ROM (IC106 or IC107), AVD (IC403), ARP & SERVO (IC301) are working correctly.
Check that outside appearance of the ICs is normal.
Check that IC pins are not short-circuited.
Check that there is no soldering error.
Check that outside appearance of the capacitors and resistors is normal.

1-2. Power supply voltage check

Check the power voltage of the power connector (CN101).
Check the power voltage of SYSCON (IC104).
Check the power voltage of ROM (IC106 or IC107).
Check the power voltage of AVD (IC403).
Check the power voltage of ARP & SERVO (IC301).
If the power voltage has any abnormality →
Check that the power supply lines are not shorted.
Check that there is no soldering error.
If any abnormality cannot be found still →
Check that each IC is working normally.

1-3. Clock signal check

Measure the clock signal frequency at CPUCK (CL101) of SYSCON (IC104) with an oscilloscope.

If the 8.25 MHz signal appears. → Check the machine according to section 1-3-1

If the 33 MHz signal appears. → Check the machine according to section 1-3-2.

If other frequencies are output.

R110 and R113 have defective soldering, X101 crystal oscillator is defective.

If the measurement point is fixed to either "H" or "L". →
Observe XFRRST (pin-⑨) of SYSCON (IC104) with an oscilloscope.

If the measurement point is "L", check the following items.
If the IC has defective soldering, if the IC is short-circuited.
If the measurement point is "H".

→ Component X101 or SYSCON (IC104) is defective.

1-3-1. When the 8.25 MHz signal appears at CPUCK

• Check the XRD, XWRH and CS0X signal.

Observe XRD (pin-⑨), XWRH (pin-⑩), and CS0X (pin-⑨) of SYSCON (IC104) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if these pins stay in the center voltage, check the followings.

Check if the signal line does not have the defective soldering.
Check if the signal line is short-circuited with other signal lines.

If you cannot find any problem → SYSCON (IC104) is defective.

• HA [0 to 21] signal and HD [0 to 15] signal check

Observe HA [0 to 21] (pins-⑩ to ⑳, ㉑ to ㉒, ㉓ to ㉔) of SYSCON (IC104) and HD [0 to 15] (pins-㉕ to ㉖) with an oscilloscope.

If these pins are fixed to either "L" (0V) or "H" (3.3V), or if the HA pin stays in the center voltage, check the followings.
(HD stays in the center voltage when it is normal.)

→ Check if the signal line does not have the defective soldering, or is short-circuited with other signal line or SYSCON (IC104) is defective.

• Reset signal check

Check if XFRRST (pin-⑨) of SYSCON (IC104) normal or not.

The signal starts up at the same time as Vcc → Defective soldering.

If the trouble does not apply to any of the above-described phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

1-3-2. When the 33 MHz signal appears at CPUCK

• WAIT signal check

Observe XWAIT (pin-⑩) of SYSCON (IC104) with an oscilloscope.

If it is fixed to "L" (0V). → Observe CS2X to CS5X (pins-⑥ to ⑨).

If CS2X or CS3X is "L". → AVD (IC403) has defective soldering or AVD is defective.

If CS4X or CS5X is "L". → ARP & SERVO (IC301) has defective soldering or ARP & SERVO is defective.

If any one of the above is not "L". → XWAIT or CSnX is short-circuited or has the defective soldering or AVD (IC403) is defective or ARP & SERVO (IC301) is defective.

Center voltage → The XWAIT line has defective soldering or is short-circuited or AVD (IC403) is defective or ARP & SERVO (IC301) is defective or SYSCON (IC104) is defective.

• CSnX signal check

Observe CS0X to CS5X (pins-⑥ to ⑨) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or if to center voltage → Check that the ICs do not have the defective soldering or is short-circuited with the other signal lines or SYSCON (IC104) is defective.

CS0X: ROM (IC106 or IC107)
CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble symptom does not apply to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

2. Test mode menu is displayed but the machine stops when menu is selected

2-1. AVD (IC403) check

Observe SDCLKO (pin-⑩) of AVD (IC403) with an oscilloscope.

95 MHz → No problem

27 MHz → Observe the XRST, HA, HD, XRD, XWRH INT and CS signal waveform at the respective pins of AVDEC, AVD (IC403) is defective.

If the signal is other than the above frequencies → AVD (IC403) 27MHz signal line (CLK1 (pin-⑩), SCLKIN (pin-⑪)) is short-circuited, IC mount is defective, AVD (IC403) is defective, PLL (IC103) is defective.

2-2. INT signal check

Observe INT0 to 2 (pins-⑩ to ⑫) of SYSCON (IC104) with an oscilloscope.

If they are fixed to "L" (0V) or fixed to the center voltage → Check that the ICs do not have the defective soldering, or are short-circuited, SYSCON (IC104) is defective, or the following ICs are not defective.

INT0: AVD (IC403)
INT1, INT2: ARP & SERVO (IC301)

2-3. If any abnormality cannot be confirmed by the above-described checks, check the CS signal that is currently output.

The CS signal other than CS0X is being output. → IC mount is defective or the IC is defective depending on the moving CS signal.

CS2X, CS3X: AVD (IC403)
CS4X, CS5X: ARP & SERVO (IC301)

If the trouble is not applicable to any of the above phenomenon, SYSCON (IC104) or ROM (IC106 or IC107) is defective.

3. If the message "SDSP No Ack" appears after the menu is displayed.

3-1. ARP & SERVO clock signal check

Check frequency of CLKIN (pin-⑩)

33 MHz → Normal

Frequency other than 33 MHz → CLKIN is short-circuited or defective soldering or PLL (IC103) is defective or ARP & SERVO (IC301) is defective

3-2. ARP & SERVO (IC301) PLL oscillation check

Observe PLCKO (pin-⑩) of ARP & SERVO (IC301) with an oscilloscope.

If the pin is fixed to either "L" (0V) or "H" (3.3V).

If XRST if fixed to "L". XRST has the defective soldering. In all other cases, ARP & SERVO (IC301) is defective

If it is oscillating.

HA [0 to 7] are HD [8 to 15] are short-circuited, check XSDSPIT and XSDSPCS or ARP & SERVO (IC301) is defective.

4. If trouble occurs at the specific item of the "Diag All Check".

IC mount of the NG item is defective or IC is defective.

5. Picture and audio are not output.

Check connection of CN601 CN602

Check for the defective connection of flat cable and check of damage of the flat cable.

6. Picture is output but audio is not output.

Check the audio data output (at pins-②, ③, and ④) of AVD (IC403)

The audio data is not output. → AVD (IC403) or audio DAC (IC502, 504) mount is defective or power supply is defective or AVD (IC403) or audio DAC (IC502, 504) is defective.

PLL (IC103) 512fs output check

If the frequency or waveform has abnormality. → The signal line has defective soldering or the signal line is short-circuited with other signal lines or PLL (IC103) is defective.

7. Audio is output but picture is not output.

(EXCEPT NS705V)

Observe pins-⑦, ⑧, ⑨, ⑫, ⑬ and ⑭ of VDAC (IC604) with an oscilloscope.

If the analog signal is not output. → The signal line has the defective soldering or is short-circuited or parts are defective or VDAC (IC604) is defective.

Audio is output but picture is not output. (NS705V)

Observe pins-⑧, ⑨, ⑫, ⑬ and ⑭ of AVD (IC403) with an oscilloscope.

If the analog signal is not output. → The signal line has the defective soldering or is short-circuited or parts are defective or AVD (IC403) is defective.

SECTION 7 ELECTRICAL ADJUSTMENT

6-11-3. Drive Auto Adjustment stops due to error.

The ARP & SERVO (IC301) analog circuit of MB-105 board is defective or RF-Amp (IC201) or M-Driver (IC202) peripheral circuit is defective or optical pickup block is defective or flat cable connection is defective

6-11-4. The product itself is defective.

- If MB-105 does not have any problem,

The board other than MB-105 board is defective or connection is defective or optical pickup block is defective or mechanism deck is defective

1. Power LED does not light in Red when the AC power is turned on.

Check the EVER -13V (pin-⑨), EVER+3.3V (pin-⑩), +11V (AUDIO) (pin-③) voltage of the power supply block CN201.

If voltage is abnormal. → The power supply block is defective.

2. Power LED does not light in green after transmitting the POWER on command. It remains lighting in red (in the STANDBY mode).

2-1. Check the EVER -13V (pin-⑨), EVER+3.3V (pin-⑩), +11V (AUDIO) (pin-③) voltage at CN201 of the power supply block/

If voltage is abnormal. → The power supply block is defective.

2-2. Check if the fuse on the IF board has blown or not.

If the fuse has blown → Replace the fuse.

2-3. Check the P-CONT (pin-②) at CN401 of the IF-109 board when the POWER button is pressed.

If it remains at "L".

→ The signal line has the defective soldering or it is short-circuited with other signal lines or capacitor or resistor is defective or IFCON is defective or connection between the power supply block and the IF-109 board is defective, or connector installation is defective, or the power supply block is defective.

2-4. Check if the button is kept depressed in the IFCON self mode.

If the button is kept depressed. → The front panel is defective, or IF-109 board is defective.

2-5. Check PONCHK (pin-④) of IFCON (IC404) on the IF-109 board.

If it is 0.5 V or more. → The power supply is defective, or IF-109 board is defective.

3. Power LED becomes red (STANDBY mode) in at once through Power LED lights in Green once when the POWER button is pressed.

3-1. Check CN201 voltage of the power supply block when the LED lights in green.

If voltage is abnormal. → The power supply block is defective, or the IF-109 board is defective, or MB-105 is defective

3-2. Check XFRRST (pin-①) at CN101 on the MB-105 board.

If it is fixed to "L". → The signal line has defective soldering, or is short-circuited with other signal lines, or parts are defective.

3-3. Check IFBSY (pin-②), XIFCS (pin-③), SIO (pin-④), SOO (pin-⑤) and SC0 (pin-⑥) at CN101

If they are fixed to "H" or "L".

→ The signal line has defective soldering, or is short-circuited with other signal line, or parts are defective, or SYSCON (IC104) is defective

If they change between "L/H".

Connector installation is defective, or the IF-109 board is defective, or SYSCON (IC104) is defective.

If they stay in the center voltage.

Poor connection of flexible wiring board such as it is inserted in an angle diagonally, or defective soldering, or is short-circuited with other signal line.

3-4. Check PONCHK (pin-④) of IFCON (IC404) on the IF-109 board.

If rise-up time from 0.5 V to 1.5 V or more takes longer time, or it does not exceed 1.5 V or more. → The IF board is defective.

4. The LED lights in green but the FL display does not light when the POWER button is pressed.

Connection between the power supply block and the IF-109 board is defective, or connector installation is defective, or the IF-109 board is defective.

5. Both picture and audio are not output.

Connection between the power supply block and the IF-109 board is defective, or connection between the IF-109 board and the AV-80 board is defective, or connection between the AV-80 board and the MB-105 board is defective, or connector installation is defective, or AV-80 board is defective.

6. Picture is not normal. (Block noise or others appear.)

The MB-105 board AVD (IC403) or SDRAM (IC404, IC405) is defective, or ARP & SERVO (IC301) is defective.

In making adjustment, refer to 7-6. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.

Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

- 1) Color monitor TV
- 2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
- 3) Frequency counter (over 8 digits)
- 4) Digital voltmeter
- 5) Standard commander (RMT-D146P/D147A/D147E/D1470/D147P)
- 6) DVD reference disc
HLX-501 (J-6090-071-A) (dual layer) (NTSC)
HLX-503 (J-6090-069-A) (single layer) (NTSC)
HLX-504 (J-6090-088-A) (single layer) (NTSC)
HLX-505 (J-6090-089-A) (dual layer) (NTSC)
HLX-506 (J-6090-077-A) (single layer) (PAL)
HLX-507 (J-6090-078-A) (dual layer) (PAL)
- 7) SACD reference disc
HLXA-509 (J-6090-090-A)
- 8) Extension Cable (J-6090-107-A)

7-1. POWER SUPPLY CHECK

1. ETXNY393N2F Board: NS930V: EC, RUS, UK

Mode	E-E
Instrument	Digital voltmeter
EVER +3.3 V Check	
Test point	CN201 pin ⑩
Specification	3.5 ± 0.2 Vdc
SW +3.3 V Check	
Test point	CN201 pin ⑩
Specification	3.5 ± 0.2 Vdc
+5 V Check	
Test point	CN201 pin ⑩
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201 pin ⑥, ⑦
Specification	11.0 ± 1.0 Vdc
+11 V (AUDIO) Check	
Test point	CN201 pin ③
Specification	11.0 ± 1.0 Vdc
EVER -13 V Check	
Test point	CN201 pin ⑨
Specification	-13.0 ± 1.0 Vdc

Checking method:

- 1) Confirm that each voltage satisfies the specification.

① Caution

Never touch the heat sink that is the primary part. It is feared that you may get an electric shock.

• Abbreviation

EC : Europe model
RUS : Russia model
UK : United Kingdom model

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-105 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV601
Specification	$1.00 \pm_{-0.02}^{+0.04}$ Vp-p

Adjusting method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Adjust the RV601 to attain $1.00 \pm_{-0.02}^{+0.04}$ Vp-p.



Figure 7-1

2. Progressive Video Output Level Adjustment (MB-105 BOARD)

<Purpose>

This adjustments progressive video output. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV602
Specification	$1.00 \pm_{-0.02}^{+0.04}$ Vp-p

Adjusting method:

- 1) In the test mode initial menu "7" Prog Level Adjustment, set so that color bars are generated.
- 2) Adjust the RV602 to attain $1.00 \pm_{-0.02}^{+0.04}$ Vp-p



Figure 7-2

3. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the S-Y level is 1.00 ± 0.05 Vp-p.



Figure 7-3

4. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	$A = 286 \pm 30$ mVp-p (NTSC)

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the S-C burst is "A".



Figure 7-4

5. Checking Component Video Output Y

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the Y level is 1.00 ± 0.05 Vp-p.



Figure 7-5

6. Checking Component Video Output B-Y

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P _B) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	$A = 646 \pm 50$ mVp-p (For US, Canadian, E) $A = 700 \pm 50$ mVp-p (Others)

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the B-Y level is A.

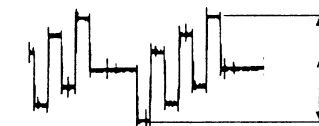


Figure 7-6

7. Checking Component Video Output R-Y

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P _R) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	$B = 646 \pm 50$ mVp-p (For US, Canadian, E) $B = 700 \pm 50$ mVp-p (Others)

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the R-Y level is B.

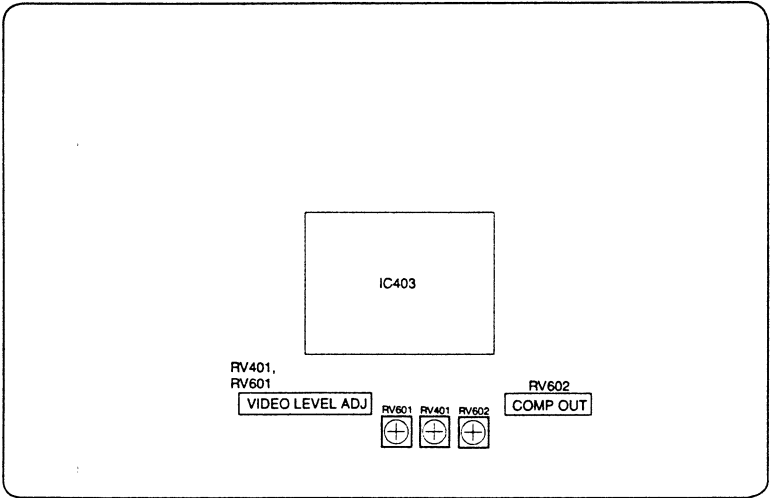


Figure 7-7

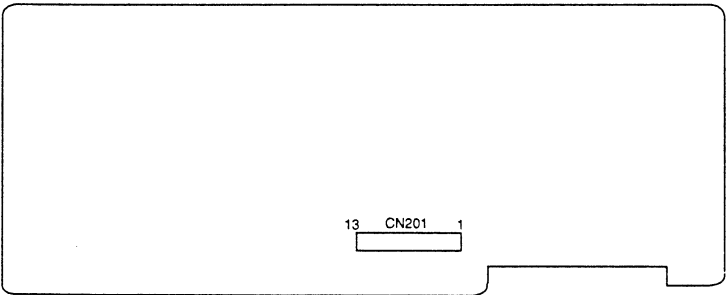
SECTION 8
REPAIR PARTS LIST

7-3. ADJUSTMENT RELATED PARTS ARRANGEMENT

MB-105 BOARD (SIDE A)



ETXNY393N2F BOARD (SIDE A)



8-1. EXPLODED VIEWS

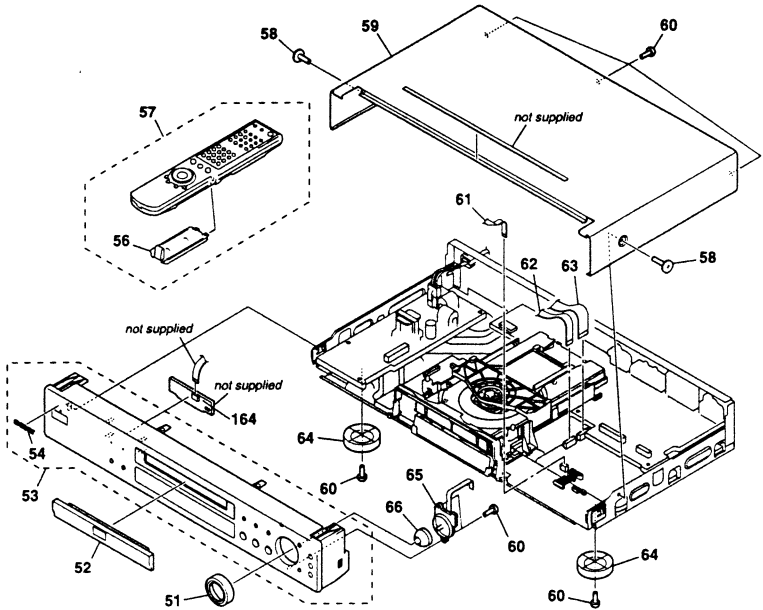
NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)
Parts Color Cabiner's Color
- Abbreviation
RUS : Russia model
HK : Hong Kong model
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of the electrical parts list.

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

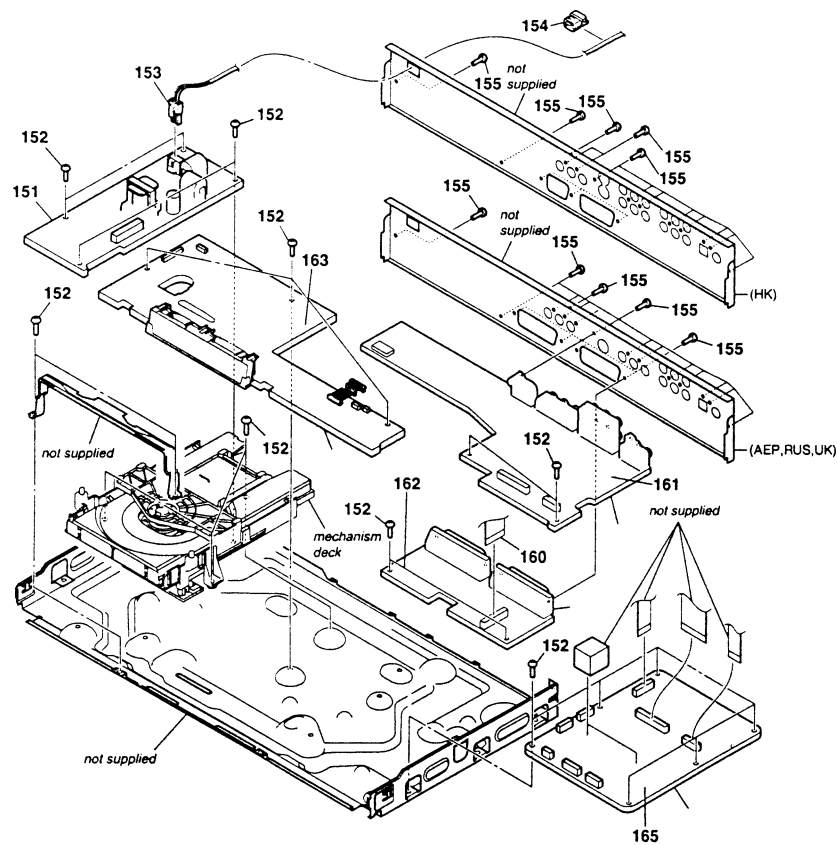
Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

8-1-1. FRONT PANEL ASSEMBLY
(NS930V)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-075-008-01	RING, SHUTTLE (BLACK)		58	3-070-883-02	SCREW, TAPPING (BLACK)	
51	3-075-008-31	RING, SHUTTLE (SILVER)		58	3-070-883-12	SCREW, TAPPING (SILVER)	
52	X-3953-414-1	COVER ASSY, TRAY (BLACK)		59	3-074-164-41	CASE (BLACK)	
52	X-3953-415-2	COVER ASSY, TRAY (SILVER)		59	3-074-164-51	CASE (SILVER)	
53	X-3953-435-2	PANEL ASSY, FRONT (BLACK)		60	3-970-608-51	SUMMITITE (B3), +8V	
53	X-3953-436-2	PANEL ASSY, FRONT (SILVER)		61	1-757-697-12	CABLE FLEXIBLE FLAT (FMO-035)	
54	4-942-568-41	EMBLEM (NO.5), SONY (BLACK)		62	1-757-694-12	CABLE FLEXIBLE FLAT (FMO-002)	
54	4-942-568-61	EMBLEM (NO.5), SONY (SILVER)		63	1-757-693-12	CABLE FLEXIBLE FLAT (FMO-001)	
56	3-073-096-01	LIQ. BATTERY		64	X-3950-448-1	FOOT ASSY	
57	1-477-213-42	REMOTE COMMANDER (RMT-D147P) (AEP, RUS, UK)		65	1-476-714-11	ENCODER, ROTARY	
57	1-477-213-32	REMOTE COMMANDER (RMT-D147E) (HK)		66	3-073-491-21	KNOB, CURSOR (BLACK)	
				66	3-073-491-71	KNOB, CURSOR (SILVER)	

8-1-2. CHASSIS ASSEMBLY
(NS930V)

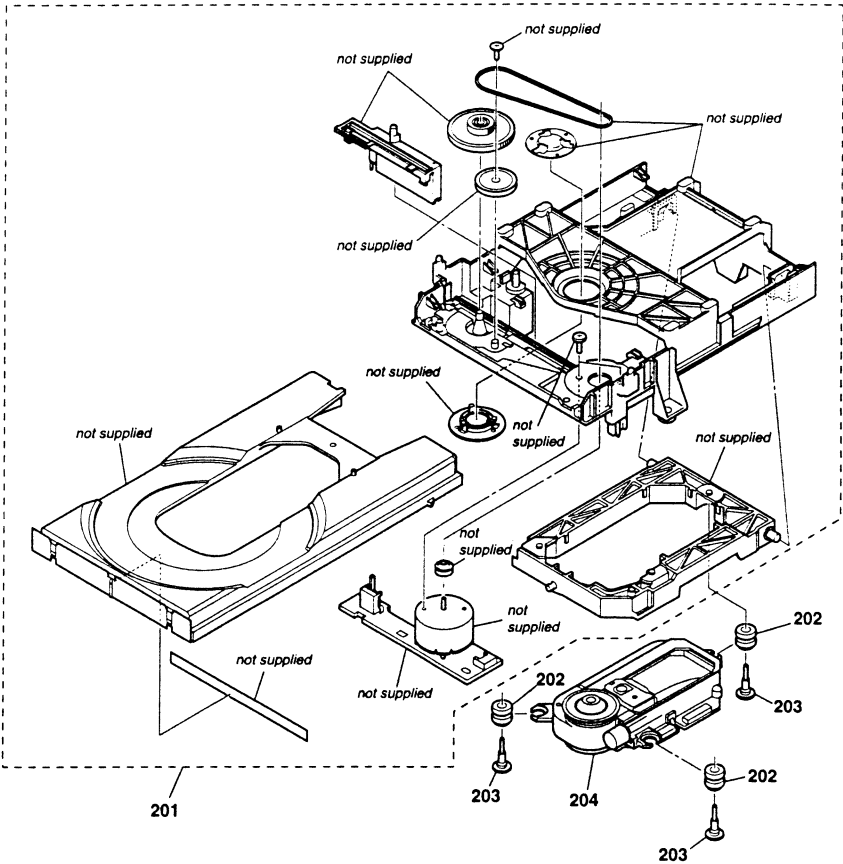


The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Δ 151	1-468-651-13	POWER SUPPLY BLOCK (ETXNY393N2F)		162	A-6061-974-A	ER-24 QS (EU) COMPL (AEP,RUS,UK)	
152	3-970-608-01	SUMITITE (B3), +8V		163	A-6061-979-A	IF-109 QS (EU) COMPL (AEP,RUS,UK)	
Δ 153	1-769-744-92	CORD, POWER			A-6071-206-A	IF-109 QS (HK) COMPL (HK)	
154	3-073-182-02	BUSHING, CODE					
155	3-970-608-51	SUMITITE (B3), +8V					
160	1-823-831-11	FAE-9 (EXCEPT HK)		165	A-6061-970-A	MB-105 QS (EC) COMPL (AEP,UK)	
161	A-6061-972-A	AV-080 GS (EU) COMPL (AEP,RUS,UK)			A-6061-956-A	MB-105 QS (RU) COMPL (RUS)	
161	A-6071-210-A	AV-080 GS (HK) COMPL (HK)			A-6071-212-A	MB-105 QS (HK) COMPL (HK)	

8-1-3. MECHANISM DECK ASSEMBLY



The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	A-6060-556-A	LOADING ASSY (T)		203	3-067-344-01	INSULATOR SCREW	
202	3-053-847-11	INSULATOR		Δ 204	A-6062-709-A	KHM-270AAA SERVICE ASSY	

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- Not all of the parts for POWER BLOCK (ETXN393N2F) are listed.
- Items marked "*" are not stocked since they are seldom required for routine service.
Some delay should be anticipated when ordering these items.

- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A... uPA...: μ PA...
uPB...: μ PB... uPC...: μ PC...
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H
- Abbreviation
AEI: AEP model
AE2: AEP model
RUS: Russia model
UK: UK model
HK: Hong Kong model

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-6061-972-A	AV-080QS(EU) BOARD COMPLETE		C223	1-137-362-91	MYLAR	470PF 5.00% 50V
		(AEP,RUS,UK)		C224	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
*	A-6071-210-A	AV-080QS(HK) BOARD COMPLETE (HK)		C224	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V

<CAPACITOR>				C226	1-109-857-11	ELECT	47UF 20.00%63V
C101	1-104-664-11	ELECT	47UF 20.00%25V	C227	1-109-857-11	ELECT	47UF 20.00%63V
C105	1-107-725-11	CERAMIC CHIP	0.1UF 10.00%16V	C230	1-109-857-11	ELECT	47UF 20.00%63V
C105	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V	C231	1-109-857-11	ELECT	47UF 20.00%63V
C106	1-104-660-91	ELECT	47UF 20.00%16V	C234	1-109-857-11	ELECT	47UF 20.00%63V
C107	1-104-660-91	ELECT	47UF 20.00%16V				
C108	1-104-660-91	ELECT	47UF 20.00%16V	C235	1-104-660-91	ELECT	47UF 20.00%16V
C109	1-163-809-11	CERAMIC CHIP	0.047UF 10.00%25V	C236	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
C109	1-165-176-11	CERAMIC CHIP	0.047UF 10.00%16V	C236	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V
C110	1-104-660-91	ELECT	47UF 20.00%16V	C237	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
C111	1-107-725-11	CERAMIC CHIP	0.1UF 10.00%16V	C237	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V
C111	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V	C238	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
C112	1-104-660-91	ELECT	47UF 20.00%16V	C238	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V
C113	1-107-725-11	CERAMIC CHIP	0.1UF 10.00%16V	C239	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
C113	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V	C239	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V
C201	1-126-767-11	ELECT	1000UF 20.00%16V	C240	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
C202	1-126-960-11	ELECT	1UF 20.00%50V	C240	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V
C203	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V	C241	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V
C204	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V	C241	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V
C205	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V	C248	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C206	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V	C248	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C207	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V	C249	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C208	1-137-362-91	MYLAR	470PF 5.00% 50V	C249	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C209	1-137-362-91	MYLAR	470PF 5.00% 50V	C250	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C210	1-137-362-91	MYLAR	470PF 5.00% 50V	C250	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C214	1-137-362-91	MYLAR	470PF 5.00% 50V	C251	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C215	1-137-362-91	MYLAR	470PF 5.00% 50V	C251	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C216	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C252	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C216	1-163-021-91	CERAMIC CHIP	0.01UF 10.00%50V	C252	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C219	1-137-362-91	MYLAR	470PF 5.00% 50V	C254	1-115-416-11	CERAMIC CHIP	0.001UF 5.00% 25V
C220	1-137-362-91	MYLAR	470PF 5.00% 50V	C254	1-163-275-11	CERAMIC CHIP	0.001UF 5.00% 50V
C221	1-137-362-91	MYLAR	470PF 5.00% 50V	C255	1-164-173-11	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V
C222	1-137-362-91	MYLAR	470PF 5.00% 50V	C256	1-164-173-11	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V
				C257	1-163-016-00	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V
				C258	1-163-016-00	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V
				C259	1-164-173-11	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V

Ref. No.	Part No.	Description	Remark
C260	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00%50V
C260	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00% 50V
C263	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00%50V
C263	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00%50V
C266	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00%50V
C266	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00%50V
C270	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V
C270	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00%50V
C272	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V
C272	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00% 50V
C301	1-104-664-11	ELECT	47UF 20.00% 25V
C304	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V
C305	1-100-298-91	FILM (AEP,RUS,UK)	3900PF 5% 100V
C309	1-137-362-91	MYLAR	470PF 5.00% 50V
C310	1-137-362-91	MYLAR	470PF 5.00% 50V
C311	1-162-970-11	CERAMIC CHIP	0.01UF 10.00% 25V
C311	1-163-021-91	CERAMIC CHIP	0.01UF 10.00% 50V
C312	1-137-362-91	MYLAR	470PF 5.00% 50V
C313	1-137-362-91	MYLAR	470PF 5.00% 50V
C314	1-136-850-11	MYLAR	0.1UF 5.00% 63V
C315	1-109-857-11	ELECT	47UF 20.00% 63V
C316	1-162-970-11	CERAMIC CHIP	0.01UF 10.00% 25V
C316	1-163-021-91	CERAMIC CHIP	0.01UF 10.00% 50V
C317	1-162-970-11	CERAMIC CHIP	0.01UF 10.00% 25V
C317	1-163-021-91	CERAMIC CHIP	0.01UF 10.00% 50V
C318	1-109-857-11	ELECT	47UF 20.00% 63V
C321	1-109-857-11	ELECT	47UF 20.00% 63V
C322	1-126-960-11	ELECT	1UF 20.00% 50V
C323	1-126-960-11	ELECT	1UF 20.00% 50V
C333	1-163-016-00	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V
C334	1-163-016-00	CERAMIC CHIP (HK)	0.0039UF 10.00% 50V
C335	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V
C335	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00% 50V
C338	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V
C338	1-163-017-00	CERAMIC CHIP	0.0047UF 10.00% 50V
C343	1-162-970-11	CERAMIC CHIP	0.01UF 10.00% 25V
C343	1-163-021-91	CERAMIC CHIP	0.01UF 10.00% 50V
C346	1-104-654-91	ELECT	330UF 20.00% 6.3V
C348	1-104-664-11	ELECT	47UF 20.00% 25V
C354	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C354	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C355	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V
C355	1-163-251-11	CERAMIC CHIP	100PF 5.00% 50V
C356	1-104-660-91	ELECT	47UF 20.00% 16V
C357	1-104-660-91	ELECT	47UF 20.00% 16V
C359	1-126-960-11	ELECT	1UF 20.00% 50V
C361	1-104-664-11	ELECT	47UF 20.00% 25V

<CONNECTOR>

CN201	1-816-332-21	CONNECTOR, FFC/PC 17P
CN301	1-816-335-21	CONNECTOR, FFC/PC 29P
CN302	1-573-734-11	PIN, CONNECTOR 7P

Ref. No.	Part No.	Description	Remark
<DIODE>			
D101	8-719-071-15	DIODE HZM6.8ZWA1TL (HK)	
D102	8-719-067-40	DIODE STZ6.8N-T146	
D102	8-719-071-15	DIODE HZM6.8ZWA1TL	
D106	8-719-067-40	DIODE STZ6.8N-T146	
D106	8-719-071-15	DIODE HZM6.8ZWA1TL	
D107	8-719-071-15	DIODE HZM6.8ZWA1TL (HK)	
D108	8-719-053-18	DIODE 1SR154-400TE-25	
D109	8-719-053-18	DIODE 1SR154-400TE-25	
D110	8-719-988-61	DIODE 1SS355TE-17 (AEP,RUS,UK)	
D301	8-719-073-01	DIODE MA1111-(K8) S0	
D301	8-719-988-61	DIODE 1SS355TE-17	
D303	8-719-050-38	DIODE M1MA152WK-T1	
D303	8-719-914-43	DIODE DAN202K-T-146	
<FERRITE BEAD>			
FB301	1-216-295-91	SHORT CHIP	0
<IC>			
IC102	8-759-662-86	IC NJM79M05DL1A(T2E)	
IC103	6-701-820-01	IC LA73053-TLM-E	
IC201	8-759-684-22	IC BA15532F-E2	
IC202	8-759-684-22	IC BA15532F-E2	
IC203	8-759-684-22	IC BA15532F-E2	
IC301	8-749-017-80	IC GP1FA551T2	
IC302	8-759-653-52	IC NJM78M05DL1A-TE1	
IC303	8-759-684-22	IC BA15532F-E2	
<JACK>			
J101	1-694-996-11	S TERMINAL CONNECTOR	
J101	1-794-198-11	CONNECTOR, S TERMINAL (AEP,RUS,UK)	
J101	1-694-484-21	TERMINAL, S (2P,V) (HK)	
J102	1-815-362-21	JACK, PIN (6P) (HK)	
J102	1-815-358-11	JACK, PIN (3P)	
J102	1-817-400-11	PHONO JACK 3P (AEP,RUS,UK)	
J103	1-793-445-11	JACK, PIN 3P (HK)	
J103	1-817-400-21	PHONO JACK 3P (AEP,RUS,UK)	
J201	1-815-029-21	JACK, PIN 6P	
J301	1-793-446-21	JACK, PIN 1P (HK)	
J301	1-817-399-11	PHONO JACK 1P (AEP,RUS,UK)	
<COIL>			
L101	1-412-060-11	INDUCTOR	22UH
L301	1-412-064-11	INDUCTOR	100UH
<TRANSISTOR>			
Q104	8-729-421-17	TRANSISTOR UN2213-TX	
Q105	8-729-024-83	TRANSISTOR MUN2111T1	
Q105	8-729-424-11	TRANSISTOR UN2111-TX	
Q201	8-729-024-89	TRANSISTOR MUN2213T1	
Q201	8-729-421-17	TRANSISTOR UN2213-TX	
Q202	8-729-027-53	TRANSISTOR DTC124TKA-T146	
Q203	8-729-010-05	TRANSISTOR MSB709-RT1	
Q203	8-729-424-02	TRANSISTOR 2SB709A-QRS-TX	

Ref. No.	Part No.	Description	Remark
Q204	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q205	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q206	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q207	6-550-137-01	TRANSISTOR MUN2131(T).SO	
Q208	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q209	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q301	8-729-010-25	TRANSISTOR MSD601-RT1	
Q301	8-729-230-50	TRANSISTOR 25C2712-YG-TE85L	
Q302	8-729-024-89	TRANSISTOR MUN2131(T)	
Q302	8-729-421-17	TRANSISTOR UN2213-TX	
Q303	8-729-027-53	TRANSISTOR DTC124TKA-T146	
Q304	8-729-010-05	TRANSISTOR MSB709-RT1	
Q304	8-729-424-02	TRANSISTOR 25B709A-QRS-TX	
Q305	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q306	6-550-137-01	TRANSISTOR2SD1938(F)-ST(TX).SO	
Q307	8-729-024-89	TRANSISTOR MUN2131(T)	
Q307	8-729-421-17	TRANSISTOR UN2213-TX (AEP,RUS,UK)	
Q308	8-729-027-53	TRANSISTOR DTC124TKA-T146 (AEP,RUS,UK)	
Q309	8-729-010-05	TRANSISTOR MSB709-RT1	
Q309	8-729-424-02	TRANSISTOR 25B709A-QRS-TX (AEP,RUS,UK)	
Q310	8-729-049-31	TRANSISTOR 25B710A-RTX	
Q311	8-729-010-25	TRANSISTOR MSD601-RT1	
Q311	8-729-230-50	TRANSISTOR 25C2712-YG-TE85L	
Q312	8-729-010-05	TRANSISTOR MSB709-RT1	
Q312	8-729-424-02	TRANSISTOR 25B709A-QRS-TX	
<RESISTOR>			
R101	1-216-295-91	SHORT CHIP	0
R103	1-216-061-91	RES-CHIP	3.3K 5% 1/10W
R108	1-216-073-91	RES-CHIP	10K 5% 1/10W
R109	1-216-021-00	RES-CHIP (HK)	68 5% 1/10W
R110	1-216-021-00	RES-CHIP	68 5% 1/10W
R111	1-216-021-00	RES-CHIP (HK)	68 5% 1/10W
R112	1-216-021-00	RES-CHIP	68 5% 1/10W
R113	1-216-021-00	RES-CHIP	68 5% 1/10W
R114	1-216-021-00	RES-CHIP (HK)	68 5% 1/10W
R115	1-216-021-00	RES-CHIP	68 5% 1/10W
R116	1-216-021-00	RES-CHIP	68 5% 1/10W
R117	1-216-021-00	RES-CHIP	68 5% 1/10W
R118	1-216-021-00	RES-CHIP (HK)	68 5% 1/10W
R119	1-216-021-00	RES-CHIP (HK)	68 5% 1/10W
R120	1-216-021-00	RES-CHIP (HK)	68 5% 1/10W
R124	1-216-049-11	RES-CHIP	1K 5% 1/10W
R136	1-216-049-11	RES-CHIP	1K 5% 1/10W
R137	1-216-049-11	RES-CHIP	1K 5% 1/10W
R141	1-216-073-91	RES-CHIP	10K 5% 1/10W
R141	1-216-295-91	(AEP,RUS,UK) SHORT CHIP (HK) 0	
R201	1-216-065-91	RES-CHIP	4.7K 5% 1/10W
R202	1-216-073-91	RES-CHIP	10K 5% 1/10W
R203	1-216-073-91	RES-CHIP	10K 5% 1/10W
R204	1-216-089-11	RES-CHIP	47K 5% 1/10W
R205	1-216-073-91	RES-CHIP	10K 5% 1/10W
R206	1-208-782-11	METAL CHIP	1K 0.5% 1/10W
R207	1-208-782-11	METAL CHIP	1K 0.5% 1/10W
R208	1-208-782-11	METAL CHIP	1K 0.5% 1/10W
R209	1-208-782-11	METAL CHIP	1K 0.5% 1/10W
R210	1-208-782-11	METAL CHIP	1K 0.5% 1/10W

<RESISTOR>

Ref. No.	Part No.	Description			Remarks
R211	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R212	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R213	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R214	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R215	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R216	1-216-049-11	RES-CHIP	1K	5%	1/10W
R217	1-216-049-11	RES-CHIP	1K	5%	1/10W
R218	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R219	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R220	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R221	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R222	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R223	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R224	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R225	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R226	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R227	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R228	1-216-061-91	RES-CHIP (AEP,RUS,UK)	3.3K	5%	1/10W
R230	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R231	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R232	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R233	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R234	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R235	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R236	1-216-045-00	RES-CHIP	680	5%	1/10W
R237	1-216-045-00	RES-CHIP	680	5%	1/10W
R238	1-216-045-00	RES-CHIP	680	5%	1/10W
R239	1-216-045-00	RES-CHIP	680	5%	1/10W
R240	1-216-045-00	RES-CHIP	680	5%	1/10W
R241	1-216-045-00	RES-CHIP	680	5%	1/10W
R242	1-216-045-00	RES-CHIP	680	5%	1/10W
R243	1-216-045-00	RES-CHIP	680	5%	1/10W
R244	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R245	1-216-045-00	RES-CHIP	680	5%	1/10W
R246	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R247	1-216-045-00	RES-CHIP	680	5%	1/10W
R248	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R249	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R250	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R251	1-216-063-91	RES-CHIP	3.9K	5%	1/10W
R252	1-216-041-00	RES-CHIP	470	5%	1/10W
R253	1-216-041-00	RES-CHIP	470	5%	1/10W
R254	1-216-041-00	RES-CHIP	470	5%	1/10W
R255	1-216-041-00	RES-CHIP	470	5%	1/10W
R256	1-216-041-00	RES-CHIP	470	5%	1/10W
R257	1-216-041-00	RES-CHIP	470	5%	1/10W
R258	1-216-089-11	RES-CHIP	47K	5%	1/10W
R259	1-216-089-11	RES-CHIP	47K	5%	1/10W
R260	1-216-089-11	RES-CHIP	47K	5%	1/10W
R261	1-216-089-11	RES-CHIP	47K	5%	1/10W
R262	1-216-089-11	RES-CHIP	47K	5%	1/10W
R263	1-216-089-11	RES-CHIP	47K	5%	1/10W
R264	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R265	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R266	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R267	1-216-061-91	RES-CHIP (HK)	3.3K	5%	1/10W
R268	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R269	1-216-061-91	RES-CHIP	3.3K	5%	1/10W
R270	1-216-089-11	RES-CHIP	100K	5%	1/10W
R271	1-216-025-11	RES-CHIP (AEP,RUS,UK)	100	5%	1/10W

Ref. No.	Part No.	Description			Remark
R271	1-216-295-91	SHORT CHIP (HK)	0		
R272	1-216-025-11	RES-CHIP (AEP,RUS,UK)	100	5%	1/10W
R273	1-216-295-91	SHORT CHIP (HK)	0		
R272	1-216-025-11	RES-CHIP (AEP,RUS,UK)	100	5%	1/10W
R273	1-216-295-91	SHORT CHIP (HK) 0			
R274	1-216-025-11	RES-CHIP (AEP,RUS,UK)	100	5%	1/10W
R274	1-216-295-91	SHORT CHIP (HK)	0		
R275	1-216-025-11	RES-CHIP (AEP,RUS,UK)	100	5%	1/10W
R275	1-216-295-91	SHORT CHIP (HK) 0			
R276	1-216-295-91	SHORT CHIP (HK) 0			
R276	1-500-341-21	FERRITE	0UH (AEP,RUS,UK)		
R276	1-414-233-22	FERRITE	0UH		
R276	1-500-341-21	FERRITE	0UH		
R301	1-216-033-00	RES-CHIP	220	5%	1/10W
R302	1-216-021-00	RES-CHIP	68	5%	1/10W
R303	1-216-049-11	RES-CHIP	1K	5%	1/10W
R304	1-216-049-11	RES-CHIP	1K	5%	1/10W
R305	1-216-073-91	RES-CHIP	10K	5%	1/10W
R306	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R307	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R308	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R309	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R310	1-216-049-11	RES-CHIP	1K	5%	1/10W
R311	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R312	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R313	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R314	1-208-782-11	METAL CHIP	1K	0.5%	1/10W
R315	1-216-295-91	SHORT CHIP	0		
R316	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R317	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R318	1-216-045-00	RES-CHIP	680	5%	1/10W
R320	1-216-045-00	RES-CHIP	680	5%	1/10W
R321	1-216-045-00	RES-CHIP	680	5%	1/10W
R322	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R323	1-216-045-00	RES-CHIP	680	5%	1/10W
R324	1-208-791-11	METAL CHIP	2.4K	0.5%	1/10W
R325	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R326	1-216-065-91	RES-CHIP (AEP,RUS,UK)	4.7K	5%	1/10W
R327	1-216-041-00	RES-CHIP	470	5%	1/10W
R328	1-216-041-00	RES-CHIP	470	5%	1/10W
R329	1-216-073-91	RES-CHIP	10K	5%	1/10W
R330	1-216-089-11	RES-CHIP	47K	5%	1/10W
R331	1-216-073-91	RES-CHIP	10K	5%	1/10W
R332	1-216-089-11	RES-CHIP	47K	5%	1/10W
R333	1-216-089-11	RES-CHIP	47K	5%	1/10W
R334	1-216-073-91	RES-CHIP	10K	5%	1/10W
R335	1-216-073-91	RES-CHIP (AEP,RUS,UK)	10K	5%	1/10W
R336	1-216-065-91	RES-CHIP (HK)	4.7K	5%	1/10W
R337	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R338	1-216-065-91	RES-CHIP (AEP,RUS,UK)	4.7K	5%	1/10W
R339	1-216-073-91	RES-CHIP (AEP,RUS,UK)	10K	5%	1/10W
R341	1-216-097-11	RES-CHIP	100K	5%	1/10W
R342	1-216-073-91	RES-CHIP (AEP,RUS,UK)	10K	5%	1/10W

Ref. No.	Part No.	Description			Remark
R343	1-216-097-11	RES-CHIP (AEP,RUS,UK)	100K	5%	1/10W
R347	1-216-041-00	RES-CHIP	470	5%	1/10W
R348	1-216-041-00	RES-CHIP (HK)	470	5%	1/10W
R349	1-216-041-00	RES-CHIP	470	5%	1/10W
R350	1-216-041-00	RES-CHIP (HK)	470	5%	1/10W
R351	1-216-295-91	SHORT CHIP	0		
R352	1-216-295-91	SHORT CHIP	0		
R363	1-216-067-00	RES-CHIP	5.6K	5%	1/10W
R364	1-216-073-91	RES-CHIP	10K	5%	1/10W
R365	1-216-097-11	RES-CHIP	100K	5%	1/10W
R366	1-216-041-00	RES-CHIP	470	5%	1/10W
R367	1-216-073-91	RES-CHIP	10K	5%	1/10W
R368	1-216-097-11	RES-CHIP	100K	5%	1/10W
R370	1-216-295-91	SHORT CHIP	0		
<SWITCH>					
S101	1-692-989-11	SWITCH, SLIDE			

<CAPACITOR>					
C901	1-104-660-91	ELECT (AEP,RUS,UK)	47UF	20.00%	16V
C902	1-104-660-91	ELECT (AEP,RUS,UK)	47UF	20.00%	16V
C903	1-104-660-91	ELECT (AEP,RUS,UK)	47UF	20.00%	16V
C905	1-104-660-91	ELECT (AEP,RUS,UK)	47UF	20.00%	16V
C907	1-104-660-91	ELECT (AEP,RUS,UK)	47UF	20.00%	16V
C913	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C913	1-164-489-11	CERAMIC CHIP (AEP,RUS,UK)	0.22UF	10.00%	16V
C914	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C914	1-164-489-11	CERAMIC CHIP (AEP,RUS,UK)	0.22UF	10.00%	16V
C927	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C927	1-163-021-91	CERAMIC CHIP (AEP,RUS,UK)	0.01UF	10.00%	50V
C938	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C938	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C940	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C940	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C943	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C943	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C945	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C945	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C950	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V

<SWITCH>

- A-6061-974-A ER-24QS(EU) BOARD COMPLETE (AEP,RUS,UK)

<CAPACITOR>

C901	1-104-660-91	ELECT (AEP.RUS,UK)	47UF	20.00% 16V
C902	1-104-660-91	ELECT (AEP.RUS,UK)	47UF	20.00% 16V
C903	1-104-660-91	ELECT (AEP.RUS,UK)	47UF	20.00% 16V
C905	1-104-660-91	ELECT (AEP.RUS,UK)	47UF	20.00% 16V
C907	1-104-660-91	ELECT (AEP.RUS,UK)	47UF	20.00% 16V

C913	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C913	1-164-489-11	CERAMIC CHIP (AEP,RUS,UK)	0.22UF	10.00%	16V
C914	1-127-715-91	CERAMIC CHIP	0.22UF	10%	16V
C914	1-164-489-11	CERAMIC CHIP (AEP,RUS,UK)	0.22UF	10.00%	16V
C927	1-162-970-11	CERAMIC CHIP	0.01UF	10.00%	25V
C927	1-163-021-91	CERAMIC CHIP (AEP,RUS,UK)	0.01UF	10.00%	50V
C938	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C938	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C940	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C940	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V

C943	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C943	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C945	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C945	1-163-251-11	CERAMIC CHIP (AEP,RUS,UK)	100PF	5.00%	50V
C950	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V

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Ref. No.	Part No.	Description	Remark
C950	1-163-251-11	CERAMIC CHIP 100PF 5.00% 50V (AEP.RUS.UK)	
C951	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C951	1-163-251-11	CERAMIC CHIP 100PF 5.00% 50V (AEP.RUS.UK)	
C962	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C962	1-163-251-11	CERAMIC CHIP 100PF 5.00% 50V (AEP.RUS.UK)	
C963	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C963	1-163-251-11	CERAMIC CHIP 100PF 5.00% 50V (AEP.RUS.UK)	
<CONNECTOR>			
CN901	1-815-149-11	CONNECTOR, FPC/FTC(1MM PIC)21P (AEP.RUS.UK)	
<JACK>			
CNJ901	1-816-044-11	CONNECTOR, SQUARE TYPE 21P (AEP.RUS.UK)	
CNJ902	1-816-044-11	CONNECTOR, SQUARE TYPE 21P (AEP.RUS.UK)	
<DIODE>			
D901	8-719-073-01	DIODE MA1111-(K8).50	
D901	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D902	8-719-073-01	DIODE MA1111-(K8).50	
D902	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D903	8-719-073-01	DIODE MA1111-(K8).50	
D903	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D904	8-719-073-01	DIODE MA1111-(K8).50	
D904	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D905	8-719-073-01	DIODE MA1111-(K8).50	
D905	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D906	8-719-053-18	DIODE 1SR154-400TE-25 (AEP.RUS.UK)	
D907	8-719-050-37	DIODE M1MA152WA-T1	
D907	8-719-914-45	DIODE DAP202K-T-146 (AEP.RUS.UK)	
D908	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D909	8-719-988-61	DIODE 1SS35STE-17 (AEP.RUS.UK)	
D917	8-719-067-40	DIODE STZ6.8N-T146	
D917	8-719-071-15	DIODE HZM6.8ZWA1TL (AEP.RUS.UK)	
D918	8-719-067-40	DIODE STZ6.8N-T146	
D918	8-719-071-15	DIODE HZM6.8ZWA1TL (AEP.RUS.UK)	
D919	8-719-067-40	DIODE STZ6.8N-T146	
D919	8-719-071-15	DIODE HZM6.8ZWA1TL (AEP.RUS.UK)	
D920	8-719-067-40	DIODE STZ6.8N-T146	
D920	8-719-071-15	DIODE HZM6.8ZWA1TL (AEP.RUS.UK)	
D922	8-719-067-40	DIODE STZ6.8N-T146	
D922	8-719-071-15	DIODE HZM6.8ZWA1TL (AEP.RUS.UK)	
D924	8-719-067-40	DIODE STZ6.8N-T146	
D924	8-719-071-15	DIODE HZM6.8ZWA1TL (AEP.RUS.UK)	
D926	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D926	8-719-069-56	DIODE UDZSTE-176.2B (AEP.RUS.UK)	
D927	8-719-083-63	DIODE UDZSTE-1713B (AEP.RUS.UK)	
D929	8-719-056-82	DIODE UDZ-TE-17-6.2B	
D929	8-719-069-56	DIODE UDZSTE-176.2B (AEP.RUS.UK)	
D930	8-719-083-63	DIODE UDZSTE-1713B (AEP.RUS.UK)	

Ref. No.	Part No.	Description	Remark
<FERRITE BEAD>			
FB901	1-414-766-22	FERRITE 0UH	
FB901	1-469-130-11	FERRITE 0UH	
FB901	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB903	1-414-766-22	FERRITE 0UH	
FB903	1-469-130-11	FERRITE 0UH	
FB903	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB904	1-414-766-22	FERRITE 0UH	
FB904	1-469-130-11	FERRITE 0UH	
FB904	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB905	1-414-766-22	FERRITE 0UH	
FB905	1-469-130-11	FERRITE 0UH (AEP.RUS.UK)	
FB905	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB907	1-414-766-22	FERRITE 0UH	
FB907	1-469-130-11	FERRITE 0UH	
FB907	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB908	1-414-766-22	FERRITE 0UH	
FB908	1-469-130-11	FERRITE 0UH	
FB908	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB909	1-414-766-22	FERRITE 0UH	
FB909	1-469-130-11	FERRITE 0UH	
FB909	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB910	1-414-766-22	FERRITE 0UH	
FB910	1-469-130-11	FERRITE 0UH	
FB910	1-469-796-11	FERRITE 0UH (AEP.RUS.UK)	
FB911	1-414-233-22	FERRITE 0UH	
FB911	1-500-341-21	FERRITE 0UH (AEP.RUS.UK)	
FB913	1-414-233-22	FERRITE 0UH	
FB913	1-500-341-21	FERRITE 0UH (AEP.RUS.UK)	
FB916	1-414-233-22	FERRITE 0UH	
FB916	1-500-341-21	FERRITE 0UH (AEP.RUS.UK)	
FB918	1-414-233-22	FERRITE 0UH	
FB918	1-500-341-21	FERRITE 0UH (AEP.RUS.UK)	
FB919	1-216-295-91	SHORT CHIP 0(AEP.RUS.UK)	
<IC>			
IC901	8-759-826-47	IC LA73052-TLM (AEP.RUS.UK)	
<COIL>			
L905	1-412-060-11	INDUCTOR 22UH (AEP.RUS.UK)	
<TRANSISTOR>			
Q901	8-729-024-89	TRANSISTOR MUN2213T1	
Q901	8-729-421-17	TRANSISTOR UN2213-TX (AEP.RUS.UK)	
Q902	8-729-027-60	TRANSISTOR DTC144TKA-T146	
Q902	8-729-424-76	TRANSISTOR UN2210-TX (AEP.RUS.UK)	
Q903	8-729-024-83	TRANSISTOR MUN2111T1	
Q903	8-729-424-11	TRANSISTOR UN2111-TX (AEP.RUS.UK)	
Q904	8-729-024-89	TRANSISTOR MUN2213T1	
Q904	8-729-421-17	TRANSISTOR UN2213-TX (AEP.RUS.UK)	
Q906	8-729-024-89	TRANSISTOR MUN2213T1	
Q906	8-729-421-17	TRANSISTOR UN2213-TX (AEP.RUS.UK)	
Q907	8-729-024-83	TRANSISTOR MUN2111T1	
Q907	8-729-424-11	TRANSISTOR UN2111-TX (AEP.RUS.UK)	

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Ref. No.	Part No.	Description	Remark
Q908	8-729-024-87	TRANSISTOR MUN2211T1	
Q908	8-729-421-20	TRANSISTOR UN2211-TX (AEP.RUS.UK)	
Q909	8-729-024-89	TRANSISTOR MUN2213T1	
Q909	8-729-421-17	TRANSISTOR UN2213-TX (AEP.RUS.UK)	
Q910	8-729-024-83	TRANSISTOR MUN2111T1	
Q910	8-729-424-11	TRANSISTOR UN2111-TX (AEP.RUS.UK)	
Q911	8-729-230-47	TRANSISTOR ZSA1162-YG-TE85L (AEP.RUS.UK)	
Q912	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (AEP.RUS.UK)	
Q913	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (AEP.RUS.UK)	
Q914	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (AEP.RUS.UK)	
Q915	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX (AEP.RUS.UK)	
<RESISTOR>			
R905	1-216-089-11	RES-CHIP 47K 5% 1/10W (AEP.RUS.UK)	
R906	1-216-089-11	RES-CHIP 47K 5% 1/10W (AEP.RUS.UK)	
R907	1-216-049-11	RES-CHIP 1K 5% 1/10W (AEP.RUS.UK)	
R908	1-216-105-91	RES-CHIP 220K 5% 1/10W (AEP.RUS.UK)	
R909	1-216-037-00	RES-CHIP 330 5% 1/10W (AEP.RUS.UK)	
R910	1-216-037-00	RES-CHIP 330 5% 1/10W (AEP.RUS.UK)	
R911	1-216-037-00	RES-CHIP 330 5% 1/10W (AEP.RUS.UK)	
R912	1-216-037-00	RES-CHIP 330 5% 1/10W (AEP.RUS.UK)	
R914	1-216-055-00	RES-CHIP 1.8K 5% 1/10W (AEP.RUS.UK)	
R915	1-216-045-00	RES-CHIP 680 5% 1/10W (AEP.RUS.UK)	
R916	1-216-055-00	RES-CHIP 1.8K 5% 1/10W (AEP.RUS.UK)	
R917	1-216-055-00	RES-CHIP 1.8K 5% 1/10W (AEP.RUS.UK)	
R918	1-216-021-00	RES-CHIP 68 5% 1/10W (AEP.RUS.UK)	
R919	1-216-295-91	SHORT CHIP 0(AEP.RUS.UK)	
R923	1-216-041-00	RES-CHIP 470 5% 1/10W (AEP.RUS.UK)	
R924	1-216-041-00	RES-CHIP 470 5% 1/10W (AEP.RUS.UK)	
R927	1-216-021-00	RES-CHIP 68 5% 1/10W (AEP.RUS.UK)	
R928	1-216-021-00	RES-CHIP 68 5% 1/10W (AEP.RUS.UK)	
R929	1-216-021-00	RES-CHIP 68 5% 1/10W (AEP.RUS.UK)	
R930	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (AEP.RUS.UK)	
R931	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (AEP.RUS.UK)	
R932	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (AEP.RUS.UK)	
R933	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (AEP.RUS.UK)	
R938	1-216-021-00	RES-CHIP 68 5% 1/10W (AEP.RUS.UK)	
R939	1-216-021-00	RES-CHIP 68 5% 1/10W (AEP.RUS.UK)	

Ref. No.	Part No.	Description	Remark
R946	1-216-049-11	RES-CHIP 1K 5% 1/10W (AEP.RUS.UK)	
R948	1-216-081-00	RES-CHIP 22K 5% 1/10W (AEP.RUS.UK)	
R950	1-216-081-00	RES-CHIP 22K 5% 1/10W (AEP.RUS.UK)	
R957	1-216-295-91	SHORT CHIP 0 (AEP.RUS.UK)	
<RELAY>			
RY901	1-515-791-11	RELAY (AEP.RUS.UK)	
RY902	1-515-791-11	RELAY (AEP.RUS.UK)	
RY903	1-515-791-11	RELAY (AEP.RUS.UK)	
RY904	1-515-791-11	RELAY (AEP.RUS.UK)	
<CAPACITOR>			
* A-6061-979-A IF-109QS(EU) BOARD COMPLETE (AEP.RUS.UK)			
* A-6071-206-A IF-109QS(HK) BOARD COMPLETE (HK)			
BZ401	1-529-986-11	BUZZER, VOLTAGE 3-067-239-01HOLD, FL	
C401	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C401	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C402	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C402	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C403	1-104-662-91	ELECT 22UF 20.00% 25V	
C404	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C404	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C407	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C407	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C409	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C409	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C411	1-104-665-11	ELECT 100UF 20.00% 25V	
C412	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C412	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C414	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C414	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C416	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C416	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C417	1-137-150-11	FILM 0.01UF 5.00% 100V	
C419	1-104-666-11	ELECT 220UF 20.00% 25V	
C420	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C420	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C421	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C421	1-163-009-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C422	1-115-339-11	CERAMIC CHIP 0.1UF 10.00% 50V	
C425	1-119-943-91	ELECT 47UF 20.00% 50V	
C426	1-104-662-91	ELECT 22UF 20.00% 25V	
C427	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C427	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C429	1-104-665-11	ELECT 100UF 20.00% 25V	
C431	1-115-339-11	CERAMIC CHIP 0.1UF 10.00% 50V	
C432	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C432	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C437	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C437	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	

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Ref. No.	Part No.	Description	Remark
C440	1-162-970-11	CERAMIC CHIP 0.01UF 10.00%25V	
C440	1-163-021-91	CERAMIC CHIP 0.01UF 10.00% 50V	
C441	1-104-664-11	ELECT 47UF 20.00%25V	
<CONNECTER>			
CN401	1-961-798-11	HARNESS, PF-130	
CN402	1-962-380-11	HARNESS, AF-128	
CN403	1-815-458-21	CONNECTOR, BOARD TO BOARD 15P	
CN405	1-785-530-11	PIN, CONNECTOR (PC BOARD) 10P	
CN406	1-785-694-11	CONNECTOR, FFC/FPC 7P	
CN407	1-785-694-11	CONNECTOR, FFC/FPC 7P	
<DIODE>			
D401	8-719-067-40	DIODE ST26.8N-T146	
D401	8-719-071-15	DIODE HZM6.8ZWA1TL	
D402	8-719-067-40	DIODE ST26.8N-T146	
D402	8-719-071-15	DIODE HZM6.8ZWA1TL	
D403	8-719-041-97	DIODE MA113-(TX)	
D404	8-719-041-97	DIODE MA113-(TX)	
D405	8-719-041-97	DIODE MA113-(TX)	
D406	8-719-041-97	DIODE MA113-(TX)	
D412	8-719-017-62	DIODE MA8068-L-TX	
<IC>			
IC403	6-701-875-01	IC LMS8117ADTX-1.8/NOBP	
IC404	6-802-218-01	IC 86CK74AFG-3V35(M	
IC405	6-703-742-01	IC S-80830CNUA-B8PT2G	
IC405	8-759-684-35	IC S-80830ANUP-EDT-12	
IC406	8-749-019-11	IC GP1UD28SYK	
<COIL>			
L401	1-408-978-21	INDUCTOR 47UH	
<FLUORESCENT INDICATOR>			
ND401	1-518-806-11	TUBE, FLUORESCENT INDICATOR	
<IC LINK>			
PS401	1-576-509-21	IC LINK 1A 50V	
PS402	1-576-509-21	IC LINK 1A 50V	
<TRANSISTOR>			
Q402	8-729-056-46	TRANSISTOR 2SC5053T100Q	
Q404	8-729-048-28	TRANSISTOR 2SD1766-T100-QR	
Q405	8-729-024-83	TRANSISTOR MUN2111T1	
Q405	8-729-424-11	TRANSISTOR UN2111-TX	
<RESISTOR>			
R401	1-216-065-91	RES-CHIP 4.7K 5% 1/10W	
R408	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R409	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R411	1-216-025-11	RES-CHIP 100 5% 1/10W	
R412	1-216-025-11	RES-CHIP 100 5% 1/10W	

Ref. No.	Part No.	Description	Remark
R413	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R414	1-216-059-00	RES-CHIP 2.7K 5% 1/10W	
R415	1-216-055-00	RES-CHIP 1.8K 5% 1/10W	
R416	1-216-055-00	RES-CHIP 1.8K 5% 1/10W	
R417	1-216-063-91	RES-CHIP 3.9K 5% 1/10W	
R418	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R419	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R420	1-216-027-00	RES-CHIP 120 5% 1/10W	
R421	1-216-059-00	RES-CHIP 2.7K 5% 1/10W	
R422	1-216-071-00	RES-CHIP 8.2K 5% 1/10W	
R423	1-216-081-00	RES-CHIP 22K 5% 1/10W	
R424	1-216-013-00	RES-CHIP 33 5% 1/10W	
R425	1-216-025-11	RES-CHIP 100 5% 1/10W	
R426	1-216-063-91	RES-CHIP 3.9K 5% 1/10W	
R427	1-216-063-91	RES-CHIP 3.9K 5% 1/10W	
R428	1-216-071-00	RES-CHIP 8.2K 5% 1/10W	
R430	1-216-059-00	RES-CHIP 2.7K 5% 1/10W	
R431	1-216-063-91	RES-CHIP 3.9K 5% 1/10W	
R433	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R434	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R435	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R437	1-216-027-00	RES-CHIP 120 5% 1/10W	
R444	1-216-025-11	RES-CHIP 100 5% 1/10W	
R446	1-216-097-11	RES-CHIP 100K 5% 1/10W	
R448	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R449	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R450	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R455	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R470	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R473	1-216-073-91	RES-CHIP 10K 5% 1/10W	
R474	1-216-025-11	RES-CHIP 100 5% 1/10W	
R481	1-216-025-11	RES-CHIP 100 5% 1/10W	
R482	1-216-025-11	RES-CHIP 100 5% 1/10W	
R483	1-216-025-11	RES-CHIP 100 5% 1/10W	
R484	1-216-025-11	RES-CHIP 100 5% 1/10W	
R485	1-216-025-11	RES-CHIP 100 5% 1/10W	
R488	1-216-081-00	RES-CHIP 22K 5% 1/10W	
R489	1-216-097-11	RES-CHIP 100K 5% 1/10W	
R490	1-216-083-00	RES-CHIP 27K 5% 1/10W	
R496	1-216-017-91	RES-CHIP 47 5% 1/10W	
R497	1-216-097-11	RES-CHIP 100K 5% 1/10W	
<SWITCH>			
S401	1-771-349-21	SWITCH, KEYBOARD	
S402	1-771-349-21	SWITCH, KEYBOARD	
S403	1-771-349-21	SWITCH, KEYBOARD	
S404	1-771-349-21	SWITCH, KEYBOARD	
S405	1-771-349-21	SWITCH, KEYBOARD	
S406	1-771-349-21	SWITCH, KEYBOARD	
S407	1-771-349-21	SWITCH, KEYBOARD	
S408	1-771-349-21	SWITCH, KEYBOARD	
S409	1-771-349-21	SWITCH, KEYBOARD	
S410	1-771-349-21	SWITCH, KEYBOARD	
S411	1-771-349-21	SWITCH, KEYBOARD	
S412	1-771-349-21	SWITCH, KEYBOARD	
<TRANSFORMER>			
T401	1-437-620-11	TRANSFORMER, DC-DC CONVERTER	

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Ref. No.	Part No.	Description	Remark
<VIBRATOR>			
X401	1-781-472-21	VIBRATOR, CERAMIC	
<LE-37QS(EU) BOARD COMPLETE (AEP,RUS,UK)>			
<LE-37QS(HK) BOARD COMPLETE (HK)>			
<CONNECTER>			
CN001	1-816-664-11	FFC/FPC CONNECTOR 7P	
<DIODE>			
D001	8-719-070-75	DIODE SLR-342DCT32	
D002	8-719-070-75	DIODE SLR-342DCT32	
D004	6-500-176-01	DIODE EB3804X-TP-J555K	
<RESISTOR>			
R001	1-216-025-11	RES-CHIP 100 5% 1/10W	
R002	1-216-025-11	RES-CHIP 100 5% 1/10W	
R004	1-216-295-91	SHORT CHIP 0	
R005	1-216-295-91	SHORT CHIP 0	
R007	1-216-033-00	RES-CHIP 220 5% 1/10W	
<CAPACITOR>			
C102	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C103	1-126-209-11	ELECT CHIP 100UF 20.00% 4V	
C104	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C105	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C106	1-162-916-11	CERAMIC CHIP 12PF 5.00% 50V	
C107	1-162-919-11	CERAMIC CHIP 22PF 5.00% 50V	
C108	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C109	1-126-209-11	ELECT CHIP 100UF 20.00% 4V	
C111	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C113	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C115	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C118	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C120	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C121	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C122	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C124	1-126-206-11	ELECT CHIP 100UF 20.00% 6.3V	
C125	1-126-607-11	ELECT CHIP 47UF 20.00% 4V	
C126	1-126-204-11	ELECT CHIP 47UF 20.00% 16V	
C127	1-126-210-21	ELECT CHIP 220UF 20.00% 4V	
C128	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C129	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C130	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C201	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	

Ref. No.	Part No.	Description	Remark
C202	1-162-970-11	CERAMIC CHIP 0.01UF 10.00%25V	
C203	1-162-964-11	CERAMIC CHIP 0.001UF 10.00%50V	
C204	1-162-964-11	CERAMIC CHIP 0.001UF 10.00%50V	
C210	1-162-966-11	CERAMIC CHIP 0.0022UF 10.00%50V	
C211	1-162-966-11	CERAMIC CHIP 0.0022UF 10.00%50V	
C212	1-162-966-11	CERAMIC CHIP 0.0022UF 10.00% 50V	
C213	1-162-966-11	CERAMIC CHIP 0.0022UF 10.00% 50V	
C214	1-164-245-11	CERAMIC CHIP 0.015UF 10.00% 25V	
C215	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C216	1-164-230-11	CERAMIC CHIP 220PF 5.00% 50V	
C218	1-162-965-11	CERAMIC CHIP 0.0015UF 10.00% 50V	
C219	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C220	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C221	1-124-779-00	ELECT CHIP 10UF 20.00% 16V	
C225	1-162-927-11	CERAMIC CHIP 100PF 5.00% 50V	
C226	1-164-230-11	CERAMIC CHIP 220PF 5.00% 50V	
C228	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C229	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C230	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C232	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C233	1-162-968-11	CERAMIC CHIP 0.0047UF 10.00% 50V	
C234	1-126-205-11	ELECT CHIP 47UF 20.00% 6.3V	
C235	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C236	1-164-739-11	CERAMIC CHIP 560PF 5.00% 50V	
C238	1-124-779-00	ELECT CHIP 10UF 20.00% 16V	
C240	1-164-677-11	CERAMIC CHIP 0.033UF 10.00% 16V	
C241	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C242	1-126-205-11	ELECT CHIP 47UF 20.00% 6.3V	
C243	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C244	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C245	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C246	1-164-677-11	CERAMIC CHIP 0.033UF 10.00% 16V	
C247	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C248	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C249	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C250	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C251	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C252	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C253	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C254	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C255	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C256	1-165-176-11	CERAMIC CHIP 0.047UF 10.00% 16V	
C257	1-165-176-11	CERAMIC CHIP 0.047UF 10.00% 16V	
C258	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C259	1-162-964-11	CERAMIC CHIP 0.001UF 10.00% 50V	
C260	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C261	1-164-390-91	CERAMIC CHIP 330PF 5.00% 50V	
C262	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C263	1-124-779-00	ELECT CHIP 10UF 20.00% 16V	
C264	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C265	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C266	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C270	1-162-970-11	CERAMIC CHIP 0.01UF 10.00% 25V	
C271	1-126-204-11	ELECT CHIP 47UF 20.00% 16V	
C272	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C273	1-107-826-11	CERAMIC CHIP 0.1UF 10.00% 16V	
C302	1-124-779-00	ELECT CHIP 10UF 20.00% 16V	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C303	6-702-020-011C	MSM51V18160F-60T47M1 (AEP,UK)		C433	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C621	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V				
C304	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C436	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C622	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V				
C305	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00%50V	C437	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C623	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V				
C308	1-126-206-11	ELECT CHIP	100UF 20.00%6.3V	C445	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C624	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C309	1-107-826-11	CERAMIC CHIP	0.1UF 10.00%16V	C446	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C625	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V				
C310	1-162-927-11	CERAMIC CHIP	100PF 5.00% 50V	C449	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C626	1-126-208-21	ELECT CHIP	47UF 20.00% 4V			<DIODE>	
C311	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C501	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C627	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V				
C312	1-110-563-11	CERAMIC CHIP	0.068UF 10.00%16V	C502	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C628	1-164-315-11	CERAMIC CHIP	470PF 5.00% 50V				
C313	1-164-677-11	CERAMIC CHIP	0.033UF 10.00% 16V	C503	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C629	1-164-315-11	CERAMIC CHIP	470PF 5.00% 50V	D501	8-719-914-45	DIODE	DAP202K-T-146
C314	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C504	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C630	1-164-173-11	CERAMIC CHIP	0.0039UF 10.00% 50V	D502	8-719-914-45	DIODE	DAP202K-T-146
C315	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C505	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C631	1-127-956-21	FILM CHIP	0.1UF 5% 16V				
C316	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V	C508	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C632	1-127-956-21	FILM CHIP	0.1UF 5% 16V	D503	8-719-914-45	DIODE	DAP202K-T-146
C317	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C509	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C633	1-164-733-11	CERAMIC CHIP	820PF 10.00% 50V				
C318	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V	C510	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C634	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V				
C319	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C511	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C635	1-126-209-11	ELECT CHIP	100UF 20.00% 4V			<FERRITE BEAD>	
C320	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V	C512	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C636	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V				
C321	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C513	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C637	1-162-964-11	CERAMIC CHIP	0.001UF 10.00% 50V	FB101	1-414-226-21	FERRITE	OUH
C322	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C514	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C638	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V	FB103	1-414-226-21	FERRITE	OUH
C323	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C515	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C639	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	FB104	1-469-324-21	FERRITE	OUH
C324	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C516	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C901	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C325	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C517	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C902	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C326	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C518	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C903	1-124-779-00	ELECT CHIP	10UF 20.00% 16V				
C327	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C519	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C904	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C328	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C520	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C905	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V	FB105	1-469-324-21	FERRITE	OUH
C329	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C521	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C907	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C330	1-162-968-11	CERAMIC CHIP	0.0047UF 10.00% 50V	C522	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C909	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C331	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C523	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C910	1-126-209-11	ELECT CHIP	100UF 20.00% 4V				
C332	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C524	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C912	1-127-715-91	CERAMIC CHIP	0.22UF 10% 16V	FB106	1-469-324-21	FERRITE	OUH
C333	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C525	1-126-205-11	ELECT CHIP	47UF 20.00% 6.3V	C913	1-126-209-11	ELECT CHIP	100UF 20.00% 4V				
C334	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C526	1-127-956-21	FILM CHIP	0.1UF 5% 16V	C914	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C335	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C527	1-117-863-11	CERAMIC CHIP	0.47UF 10.00% 6.3V	C915	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C337	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C529	1-115-416-11	CERAMIC CHIP	0.001UF 5.00% 25V	C916	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	FB107	1-469-324-21	FERRITE	OUH
C338	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C530	1-127-956-21	FILM CHIP	0.1UF 5% 16V	C917	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C339	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C531	1-127-956-21	FILM CHIP	0.1UF 5% 16V	C919	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C340	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C532	1-117-863-11	CERAMIC CHIP	0.47UF 10.00% 6.3V	C920	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C343	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C533	1-127-956-21	FILM CHIP	0.1UF 5% 16V	C921	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	FB108	1-469-324-21	FERRITE	OUH
C344	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C534	1-126-205-11	ELECT CHIP	47UF 20.00% 6.3V	C922	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C401	1-126-193-11	ELECT CHIP	1UF 20.00% 50V	C535	1-126-205-11	ELECT CHIP	47UF 20.00% 6.3V	C923	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C404	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C537	1-162-964-11	CERAMIC CHIP	0.001UF 10.00% 50V	C924	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	FB109	1-469-324-21	FERRITE	OUH
C405	1-124-779-00	ELECT CHIP	10UF 20.00% 16V	C538	1-117-863-11	CERAMIC CHIP	0.47UF 10.00% 6.3V	C925	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C407	1-124-779-00	ELECT CHIP	10UF 20.00% 16V	C601	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C926	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C408	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C602	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C927	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C410	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C603	1-162-964-11	CERAMIC CHIP	0.001UF 10.00% 50V	C928	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	FB110	1-469-324-21	FERRITE	OUH
C411	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C604	1-126-208-21	ELECT CHIP	47UF 20.00% 4V	C929	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C413	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C605	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C930	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C414	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C606	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C931	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C416	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C607	1-126-208-21	ELECT CHIP	47UF 20.00% 4V	C932	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C417	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C608	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C933	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	FB111	1-469-324-21	FERRITE	OUH
C418	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C609	1-126-208-21	ELECT CHIP	47UF 20.00% 4V	C934	1-164-677-11	CERAMIC CHIP	0.033UF 10.00% 16V				
C419	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C610	1-126-208-21	ELECT CHIP	47UF 20.00% 4V	C935	1-164-677-11	CERAMIC CHIP	0.033UF 10.00% 16V				
C420	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C611	1-126-208-21	ELECT CHIP	47UF 20.00% 4V	C936	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V				
C421	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	C612	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V					FB112	1-414-226-21	FERRITE	OUH
C423	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C613	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V			<CONNECTOR>		FB501	1-414-226-21	FERRITE	OUH
C424	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C614	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V								
C426	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C615	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	CN101	1-815-459-21	CONNECTOR, BOARD TO BOARD 15P					
C427	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C616	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	CN104	1-770-470-21	PIN, CONNECTOR (PC BOARD) 6P		FB502	1-414-226-21	FERRITE	OUH
C429	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C617	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V								
C430	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C618	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V	CN203	1-815-507-21	CONNECTOR, FFC/PCB 26P					
C431	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C619	1-126-208-21	ELECT CHIP	47UF 20.00% 4V								
C432	1-162-970-11	CERAMIC CHIP	0.01UF 10.00%25V	C620	1-107-826-11	CERAMIC CHIP	0.1UF 10.00% 16V								

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Ref. No.	Part No.	Description	Remark
		<FILTER>	
FL102	1-234-177-21	FERRITE	OUH
FL103	1-234-177-21	FERRITE	OUH
FL104	1-234-177-21	FERRITE	OUH
FL105	1-234-177-21	FERRITE	OUH
FL106	1-234-177-21	FERRITE	OUH
FL107	1-233-893-21	FILTER, CHIP EMI	
FL108	1-234-177-21	FERRITE	OUH
FL109	1-234-177-21	FERRITE	OUH
FL201	1-234-177-21	FERRITE	OUH
FL402	1-234-177-21	FERRITE	OUH
FL403	1-234-177-21	FERRITE	OUH
FL404	1-234-177-21	FERRITE	OUH
FL501	1-234-177-21	FERRITE	OUH
FL502	1-234-177-21	FERRITE	OUH
FL901	1-234-177-21	FERRITE	OUH
FL902	1-234-177-21	FERRITE	OUH
FL903	1-234-177-21	FERRITE	OUH
FL905	1-234-177-21	FERRITE	OUH
		<IC>	
IC101	8-759-643-29	IC BR24C64F-E2	
IC102	6-702-302-01	IC TK11133CSCL-G	
IC103	6-701-879-01	IC CY242332CT	
IC104	6-701-837-01	IC MB91307RPFV-G-BND-E1	
IC106	8-759-692-08	IC MBM29DL324BE-90PFTN	
IC108	6-701-874-01	IC IDT71V016SA15PH8(SCD2994)	
IC201	8-759-828-02	IC SP3728AC	
IC202	8-759-826-42	IC FAN8034	
IC301	6-701-876-01	IC CXD9703R	
IC302	6-702-302-01	IC TK11133CSCL-G	
IC303	6-701-969-01	IC K4F151612D-UL60T	
IC401	6-702-300-01	IC TK11118CSCL-G	
IC403	8-752-416-45	IC CXD193SQ	
IC406	6-700-098-01	IC HY57V641620HGT-P-TR-V	

Ref. No.	Part No.	Description	Remark
IC501	8-752-418-21	IC CXD1938AR	
IC502	6-701-674-01	IC CXD9675R-L	
IC503	8-759-399-46	IC TW32FU(TE12R)	
IC504	6-700-533-01	IC CXD9674TN-E2	
IC601	6-702-301-01	IC TK11125CSCL-G	
IC602	6-701-814-01	IC CXD9698R	
IC603	8-759-663-74	IC HY57V1616100TC-7TR	
IC604	6-701-079-01	IC ADV7300AKST	
IC605	6-702-301-01	IC TK11125CSCL-G	
IC901	6-702-299-01	IC TK11225CMCL	
IC903	6-700-353-01	IC MT48LC1M16A1TG-6STR	
IC905	8-752-416-77	IC CXD2753R	
IC906	6-702-231-01	IC LMH6642MFX/NOPB	
		<COIL>	
L001	1-414-410-21	INDUCTOR 10UH	
L201	1-412-031-11	INDUCTOR 47UH	
L202	1-412-031-11	INDUCTOR 47UH	
		<TRANSISTOR>	
Q201	8-729-920-79	TRANSISTOR 2SB1132-T100-QR	
Q202	8-729-920-79	TRANSISTOR 2SB1132-T100-QR	
Q601	8-729-230-47	TRANSISTOR 2SA1162-YG-TE8LS (RUS, AEP, UK)	
		<RESISTOR>	
R021	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R026	1-216-821-11	METAL CHIP 1K 5% 1/10W (AEP, RUS, UK)	
R028	1-216-864-11	SHORT CHIP 0 (AEP, RUS, UK)	
R102	1-216-809-11	METAL CHIP 100 5% 1/10W	
R106	1-216-797-11	METAL CHIP 10 5% 1/10W	
R107	1-216-845-11	METAL CHIP 100K 5% 1/10W	
R108	1-216-864-11	SHORT CHIP 0	
R109	1-216-797-11	METAL CHIP 10 5% 1/10W	
R110	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R111	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R112	1-216-845-11	METAL CHIP 100K 5% 1/10W	
R113	1-216-837-11	METAL CHIP 22K 5% 1/10W	
R114	1-216-823-11	METAL CHIP 1.5K 5% 1/10W	

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Ref. No.	Part No.	Description	Remark
R115	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R117	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R118	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R119	1-216-801-11	METAL CHIP 22 5% 1/10W	
R120	1-216-801-11	METAL CHIP 22 5% 1/10W	
R121	1-216-797-11	METAL CHIP 10 5% 1/10W	
R122	1-216-801-11	METAL CHIP 22 5% 1/10W	
R123	1-216-827-11	METAL CHIP 3.3K 5% 1/10W	
R124	1-216-827-11	METAL CHIP 3.3K 5% 1/10W	
R125	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R126	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R129	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R133	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R138	1-216-809-11	METAL CHIP 100 5% 1/10W	
R139	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R140	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R144	1-216-797-11	METAL CHIP 10 5% 1/10W	
R146	1-216-797-11	METAL CHIP 10 5% 1/10W	
R148	1-216-809-11	METAL CHIP 100 5% 1/10W	
R150	1-216-827-11	METAL CHIP 3.3K 5% 1/10W	
R152	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R153	1-216-827-11	METAL CHIP 3.3K 5% 1/10W	
R154	1-216-809-11	METAL CHIP 100 5% 1/10W	
R155	1-216-809-11	METAL CHIP 100 5% 1/10W	
R156	1-216-827-11	METAL CHIP 3.3K 5% 1/10W	
R159	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R160	1-216-809-11	METAL CHIP 100 5% 1/10W	
R164	1-216-075-00	RES-CHIP 12K 5% 1/10W (AEP, UK)	
R164	1-216-057-00	RES-CHIP 2.2K 5% 1/10W (HK)	
R164	1-216-065-91	RES-CHIP 4.7K 5% 1/10W (RUS)	
R165	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R166	1-216-033-00	RES-CHIP 220 5% 1/10W	
R167	1-216-809-11	METAL CHIP 100 5% 1/10W	
R169	1-216-089-11	RES-CHIP 47K 5% 1/10W (AEP, UK)	
R169	1-216-081-00	RES-CHIP 22K 5% 1/10W (HK)	
R169	1-216-069-00	RES-CHIP 6.8K 5% 1/10W (RUS)	
R171	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R172	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R173	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R176	1-216-809-11	METAL CHIP 100 5% 1/10W	
R177	1-216-809-11	METAL CHIP 100 5% 1/10W	
R178	1-216-809-11	METAL CHIP 100 5% 1/10W	
R179	1-216-809-11	METAL CHIP 100 5% 1/10W	
R183	1-216-809-11	METAL CHIP 100 5% 1/10W	
R187	1-216-809-11	METAL CHIP 100 5% 1/10W	
R188	1-216-809-11	METAL CHIP 100 5% 1/10W	
R189	1-216-809-11	METAL CHIP 100 5% 1/10W	
R191	1-216-864-11	SHORT CHIP 0	
R193	1-216-809-11	METAL CHIP 100 5% 1/10W	
R195	1-216-809-11	METAL CHIP 100 5% 1/10W	
R196	1-216-809-11	METAL CHIP 100 5% 1/10W	
R197	1-216-809-11	METAL CHIP 100 5% 1/10W	
R198	1-216-809-11	METAL CHIP 100 5% 1/10W	
R206	1-216-829-11	METAL CHIP 4.7K 5% 1/10W	
R207	1-216-809-11	METAL CHIP 100 5% 1/10W	
R210	1-216-815-11	METAL CHIP 330 5% 1/10W	
R211	1-216-809-11	METAL CHIP 100 5% 1/10W	
R212	1-216-809-11	METAL CHIP 100 5% 1/10W	
R213	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R214	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R216	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R217	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R218	1-216-846-11	METAL CHIP 120K 5% 1/10W	
R219	1-216-846-11	METAL CHIP 120K 5% 1/10W	
R220	1-216-847-11	METAL CHIP 150K 5% 1/10W	
R221	1-216-847-11	METAL CHIP 150K 5% 1/10W	
R222	1-216-842-11	METAL CHIP 56K 5% 1/10W	
R223	1-216-842-11	METAL CHIP 56K 5% 1/10W	
R224	1-216-850-11	METAL CHIP 270K 5% 1/10W	
R225	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R226	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R227	1-216-846-11	METAL CHIP 120K 5% 1/10W	
R228	1-216-061-91	RES-CHIP 3.3K 5% 1/10W	
R229	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R230	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R231	1-216-855-11	METAL CHIP 680K 5% 1/10W	
R232	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R233	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R234	1-216-803-11	METAL CHIP 33 5% 1/10W	
R235	1-216-809-11	METAL CHIP 100 5% 1/10W	
R236	1-216-803-11	METAL CHIP 33 5% 1/10W	
R238	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R239	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R240	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R241	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R242	1-216-849-11	METAL CHIP 220K 5% 1/10W	
R243	1-216-853-11	METAL CHIP 470K 5% 1/10W	
R244	1-216-821-11	METAL CHIP 1K 5% 1/10W	
R245	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R246	1-216-809-11	METAL CHIP 100 5% 1/10W	
R248	1-216-803-11	METAL CHIP 33 5% 1/10W	
R249	1-216-803-11	METAL CHIP 33 5% 1/10W	
R250	1-218-895-11	METAL CHIP 100K 0.5% 1/10W	
R251	1-216-841-11	METAL CHIP 47K 5% 1/10W	
R252	1-216-839-11	METAL CHIP 33K 5% 1/10W	
R253	1-218-889-11	METAL CHIP 56K 0.5% 1/10W	
R254	1-218-895-11	METAL CHIP 100K 0.5% 1/10W	
R255	1-218-889-11	METAL CHIP 56K 0.5% 1/10W	
R256	1-216-809-11	METAL CHIP 100 5% 1/10W	
R259	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R260	1-216-834-11	METAL CHIP 12K 5% 1/10W	
R261	1-216-833-11	METAL CHIP 10K 5% 1/10W	
R262	1-216-815-11	METAL CHIP 330 5% 1/10W	
R263	1-216-861-11	METAL CHIP 2.2M 5% 1/10W	
R264	1-216-845-11	METAL CHIP 100K 5% 1/10W	
R265	1-216-838-11	METAL CHIP 27K 5% 1/10W	
R269	1-216-833-11	METAL CHIP 10K 5% 1/10W	

POWER BLOCK (ETXNY393N2F)

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<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
		ACCESSORIES *****					
△	1-770-019-51	ADAPTOR CONVERSION PLUG 3P (UK,HK)					
	1-823-364-21	CORD CONNECTION					
	3-083-193-11	MANUAL INSTRUCTION (FRENCH) (AEP)					
	3-083-193-21	MANUAL INSTRUCTION (GERMAN) (AEP)					
	3-083-193-31	MANUAL INSTRUCTION (ITALIAN) (AEP)					
	3-083-193-51	MANUAL INSTRUCTION (SPANISH) (AEP)					
	3-083-193-61	MANUAL INSTRUCTION (PORTUGUESE) (AEP)					
	3-083-193-41	MANUAL INSTRUCTION (DUTCH) (AEP)					
	3-083-191-11	MANUAL INSTRUCTION (BRITISH ENGLISH) (UK)					
	3-083-191-21	MANUAL INSTRUCTION (RUSSIAN) (RUS)					
	3-084-893-11	MANUAL INSTRUCTION (ENGLISH) (HK)					
	3-084-893-21	MANUAL INSTRUCTION (CHINESE TRADITIONAL)(HK)					

<p>The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.</p>	<p>Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.</p>
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9-929-768-11

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Home Storage Company

2003F0500-1
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